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ORIGINAL ARTICLES.

THE CHOICE OF OPERATIONS FOR THE REMOVAL OF VESICAL CALCULI IN THE MALE.

Read in the Section of Surgery and Anatomy, at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

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The subject of stone in the bladder possesses peculiar and always fresh interest for the surgeon, and no matter how often discussed, any suggestions that may shed light on the subject are at all times welcome. The object of this paper is not, however, to present any startling or novel facts, but to calmly, dispassionately and impartially consider the question of "The Choice of Operations for the Removal of Vesical Calculi in the Male."

The safest and best method of removing stones from the bladder has long been sought but, like the philosopher's stone, has never been found. There is no *best* operation for the extraction of urinary calculi. Every case of stone has its special indications, and the best results will be attained by the surgeon who has a thoroughly practical knowledge of all plans of operating and who appreciates the paramount importance of selecting the operation best adapted to the case under consideration. American surgeons, as a rule, recognize this principle and shape their practice accordingly. I have myself done all of the operations usually practiced, except the recto-vesical. I have often congratulated myself that surgery possesses so many resources for the relief of this distressing and painful malady.

Practically, when a stone has become too large to be evacuated through the natural passages, even after free dilatation of the urethra, one of two courses may be adopted by the surgeon for the relief of the great suffering and distress incident to its long-continued presence in the bladder:

1. The formation of an artificial opening sufficiently large to permit its extraction in its integrity or after it has been fragmentized.

2. The pulverization of the stone so that it may pass or be removed through the natural passages.

The success of either of these methods is largely dependent on the thorough preparatory treatment of the patient. The preëminent success of Dudley, Mott and others, was doubtless due to the careful preparation of the subject of operation, and my own success has been greatly enhanced by a strict observance of the plan. The preparation should consist in diminishing or reducing the irritability and inflammation of the bladder and urethra, correcting morbid conditions of the urine, and improving the general health of the patient. In most cases, the treatment is followed by mitigation of the painful and distressing symptoms which have so long harrassed the patient, and in some the relief is so great that they are often disposed to delay operative procedure indefinitely. There are some cases, however, in which no treatment, general or local, has any beneficial effect. Patients, in spite of treatment, continue to become more and more emaciated and debilitated, the constitution is shattered, and the urine filled with pus and often stinking with putridity.

When judicious treatment fails to effect the desired result, it will be wise, in my judgment, to decline operative interference, because such interference will nearly always be attended with rapidly fatal consequences. I have on several occasions declined to operate under such circumstances and have never regretted it.

The first method of operation referred to—"cutting for the stone"—is one of the oldest operations known to surgeons; and although it has undergone numerous changes since the disciples of Celsus blindly cut on the gripe, it is still regarded as a useful and valuable—in many cases the only—means of ridding the bladder of its foreign occupant.

The selection of the method of lithotomy will be discussed as we advance.

The second plan of removing stones from the bladder—by crushing—a comparatively modern procedure, was devised and brought into practical utility by Civiale in 1824. It consists in crushing the stone at many short sittings, with brief use of instruments, and leaving the fragments to be disposed of by the natural efforts of the bladder.

The great number of sittings, the excessive irritation set up in the bladder and urethra by the irregular fragments of stone, and the numerous complications that follow this method formed serious obstacles to its general adoption, and it was

rapidly losing its hold on the profession when our distinguished countryman, Prof. Henry J. Bigelow, happily conceived the idea of crushing the calculus and removing the fragments at one and the same sitting by means of specially devised instruments. The new method, "litholapaxy," was eagerly accepted by the surgical profession, and has now nearly displaced the ordinary operation of lithotrity. It was a brilliant discovery, and the surgical world owes an everlasting debt of gratitude to the genius of Bigelow.

In considering the choice of operation for the removal of calculi, the circumstances which influence the result of each method of operation should be thoroughly understood, their comparative value fully appreciated, and the various conditions of the patient, and of the stone itself, comprehended.

The data from which a choice is determined are:

1. The age of the patient.
2. Size and consistence of the stone.
3. The recurrence of the stone.
4. Condition of the urinary apparatus.
5. The results of the different methods.

The age of the patient is a very important element in the selection of a mode of operation. It is almost universally conceded that in children under 16 years of age, lithotomy is one of the most successful of the major operations and is really one of the triumphs of surgery. Nothing could be gained by substituting lithotrity or litholapaxy for it, even if there were no difficulties in the way of their performance.

The average rate of mortality in lithotomy is generally reported as one in sixteen. Cheselden lost one in thirty-five. The reports of St. Thomas' Hospital show one in fifty-eight. Gross reported one in thirty-six. In my own practice in children under 16 years of age, seventy-one submitted to the medio-bilateral method fully and thoroughly recovered. These results have never been equalled by either method of crushing, and I cannot understand why surgeons should desire to change the mode of operation which has in children given such brilliant success. Some very distinguished and learned surgeons have, however, advocated and practiced rapid crushing in children and have claimed good results from it. The reasons given by its advocates for the preference are, rapidity of cure and absence of cutting.

The first claim is specious. In a majority of well executed cutting operations the little patients are up in a day or two and in a week are well to all intents and purposes. Two-thirds of the cases submitted to the operation require no after-treatment except cleanliness.

In regard to the second claim, children being ignorant of the nature and magnitude of the operation, have no mental disquietude or dread of it, and the operation is so quick, so easy, and so safe that it amounts to nothing.

Statistics of litholapaxy in children are very meagre. Keegan's tabulated report of fifty-six recoveries and two deaths, made to the British Medical Association at Brighton in 1887, is the most brilliant result that I am cognizant of. All of these operations were made on Indian boys. Is it not probable that Indian boys have a peculiar tolerance of operation which is not enjoyed by boys of other countries? This supposition is confirmed and sustained by the fact that Freyer reports 143 lithotomies on Indian boys without a death.

Until a larger number of statistical tables have been gathered by different operators the relative success of the cutting and crushing methods in children cannot be positively determined. But when the small size and delicate texture of the urethra, and the high position and the irritability of the bladder, and the erethism of the nervous system in children are considered, it can be easily believed that a smooth incision in the prostatic portion of the urethra and the gentle withdrawal of the stone will be followed by better results than when the prolonged and tedious manipulations necessary in litholapaxy have been employed. I think it may be safely concluded that in children under the age of 16 years the cutting method should be chosen as the safer and better method of removing vesical calculi.

After puberty and even in advanced age, crushing is *the* operation *par excellence*, and when the environments of the case have been favorable it has proven eminently successful. It should be chosen as a general rule of practice, but other considerations, which will be discussed, should be taken into account in dealing with individual cases.

In advanced age the loss of vital integrity, the necessarily increased size of the prostate gland with its consequences, thickening and contraction of the bladder, etc., cause every method to be more fatal, and the fatality increases with the increase of age. Crushing, as a general rule, has shown better results in such cases than cutting, and should be chosen as offering the best chances of relief. My individual experience, however, does not sustain this opinion. Cutting in my hands has been as successful as has crushing in the hands of others or in my own. I lithotomized eight old men in the last few years the sum of whose ages aggregated 500 years (an average of 62½), with complete restoration of health and the return of the functions of the urinary organs. Old age alone does not constitute a bar to either operation.

The character of the calculus will greatly influence the surgeon in his choice of operation, and it is absolutely necessary that a correct knowledge of its size and consistence should be obtained, in order that the operation be suitably adapted to the case under advisement. The surgeon may form a good estimate of the size and consistence by the use of the sound, but its actual measure-

ment by the lithotrite will give more satisfaction.

When a stone is small or of medium size, with favorable surroundings, the crushing method should unhesitatingly be chosen. Even when a stone is large with comparatively soft texture, it should be submitted to crushing. Before Bigelow proved to the contrary, it was thought that no stone more than 1 inch in diameter should be crushed; now very much larger ones are often successfully dealt with in this way. It is hard to say how large a stone can be safely crushed considering alone the size of the calculus. I successfully crushed and removed one weighing more than 3 ozs. at one sitting.

By the time, however, a stone has attained large size, serious pathological changes are produced in the bladder and associate organs by its long-continued presence, which offer serious impediments to crushing, and, in my judgment, it can be more safely and successfully removed by one of the cutting methods of operation.

A greater obstacle to the crushing operation than the size of the calculus is its consistence. The hard oxalate of lime or uric acid stone, especially if of large size, often resists the most powerful lithotrite, and even when it can be broken into pieces, the time consumed, the necessarily frequent introduction of instruments, and the marked angularity of the hard fragments, often cause serious injury to the bladder and urethra, and even death of the patient. I am aware that under the improved crushing operation very hard and quite large calculi may be successfully crushed, but I am fully convinced that a well selected cutting operation under the same circumstances will prove safer and more successful.

Lithotomy should, in my opinion, be chosen in all cases when a large calculus of the oxalate or uric acid variety exists.

In cases of encysted stone, which fortunately are very rare, lithotomy is alone suited for its removal. It should be selected also for calculi formed on foreign bodies which cannot be crushed.

The relative frequency of the recurrence of stone after the crushing and cutting methods should have great weight in selecting the mode of operation. It is acknowledged that after lithotrity recurrence happens much more frequently than after cutting. In the practice of Sir Henry Thompson, the greatest living lithotritist, a return of calculus occurred once in seven cases. It is estimated by other distinguished writers that it takes place once in every five cases—20 per cent.—when not more than 2 per cent. return after lithotomy. This would in itself be sufficient reason for choosing lithotomy in preference to the old method of crushing. But it is believed that litholapaxy is more thorough in clearing the bladder of fragments, and that consequently the recurrence is less frequent, probably not more frequent than after lithotomy. This point has not yet been settled and cannot be until extended and reliable reports in reference to it have been collected and tabulated.

The state of the urethra, prostate gland, bladder, and the kidneys often determines the surgeon in his choice of the two methods. In considering the state of the urethra in this connection two points must be determined:

1. How far the urethra will admit instruments.
2. How far the urethra will tolerate instruments.

In regard to the first, if a stricture will admit of dilatation, crushing is not contraindicated; but if the stricture is old, indurated, tortuous and accompanied with fistulæ, or if it is less advanced but rigors and fevers are produced at every attempt at dilatation, cutting should be chosen, for the reason that while it permits the removal of the stone it at the same time affords rest to the bladder and cure to the stricture.

In reference to the second, every surgeon is familiar with the difference in the temper of that canal under various circumstances and in different individuals. Its tolerance is at times wonderful. Instruments of the largest size may often be passed and retained for a considerable period of time with impunity. On the other hand, it is often so intolerant that the most delicate touch gives rise to great constitutional disturbance and even death. When this intolerant state of the urethra exists and cannot be removed by appropriate treatment, it will evidently be better to choose that procedure which will do least to ruffle the temper of the urethra. The single introduction of the staff by which the knife is guided into the bladder will certainly disturb the irritable urethra less than the necessarily frequent introduction of the lithotrite and aspirating tube used in the rapid crushing operation.

In the irritable urethra dependent on stricture nothing gives such prompt relief as a division of the stricture at the time the stone is removed by cutting. I had two cases under my observation and treatment recently in which the introduction of the smallest-sized sound caused rigors and intense urethral fever whenever used, yet after the division of the stricture and extraction of the calculi both patients recovered perfectly without rigors, fever, or other troubles.

The condition of the prostate gland must receive the special attention of the surgeon in the selection of an operation. As long as its enlargement does not interfere with the efficient use of instruments, as long as it has not caused serious trouble in the bladder by obstructing the perfect evacuation of the urine, and has not produced ammoniacal putridity of the urine, the crushing method should be chosen as the better; but when it is excessively enlarged in its central portion or is the seat of a tumor, rendering the urethral canal narrow and tortuous, causing difficulty in the introduction of the instruments necessary, a well

selected cutting operation should be chosen. Should the prostate be much inflamed or contain an abscess in its texture, the cutting operation should be chosen as offering the surest relief to the patient.

The enlargement of the gland is generally associated with other pathological conditions which interfere very materially with crushing, *e. g.*, inflammation, thickening and contraction of the bladder, together with ammoniacal urine. Under such circumstances lithotomy should be selected because it drains the viscus and leaves it at rest and at the same time affords a better opportunity for applying remedies to the parts affected. Besides, an incision, especially if bilateral, is often followed by diminution of the hypertrophied gland, and if a tumor exists in its substance, it may be enucleated, thus removing obstructions and often restoring the lost power of micturition.

The choice of operative procedure in diseased conditions of the bladder should be determined by the extent of the pathological changes produced in that viscus by the irritation of the stone. If these changes are not excessive and other conditions are favorable crushing may be used with the best prospects of good results, but if a high degree of chronic inflammation has been excited, especially if pathological changes have resulted in thickening of the walls and diminution of the cavity, and often sacculation of the bladder, cutting should be chosen, no matter how small or how soft the stone.

When organic diseases of the kidneys have made much progress and are accompanied with pathological changes in other organs, all operations are fraught with danger and surgeons should content themselves with palliating the urgent symptoms and making the remaining days of the patient as comfortable as his resources will permit. If, however, in these grave cases the sufferings of the patient become intolerable and cannot be mitigated, it is his duty to offer the chance of relief that can only be given by operative measures. When renal involvement is of less degree and uncomplicated the character of operative procedure should be decided by the environments of the case. The same rule should govern the surgeon in making his choice as in other cases without reference to the condition of the kidneys.

The result of operations for stone, in cases in which there are no complications and in which a judicious selection of the method has been made, is, in the majority of cases, the removal of all distressing symptoms and the complete restoration of the health of the patient. Each method, however, is under certain circumstances perilous, and attended with greater or less rate of mortality. The relative degree of mortality of the two methods has not and probably never can be estimated by statistics, because the cases submitted to crushing are selected and the operation is done under the most favorable circumstances, while cases submitted to cutting are taken indiscriminately and therefore often present the most unfavorable conditions, with all the difficulties of large stones, diseased bladders and bad constitutions. It has been estimated by statistics that one death occurs in nine and a half cases submitted to lithotrity; one in eighteen and a half in litholapaxy; one in eleven and a half in lithotomy as a general rule; but in the hands of Dudley only one death occurred in thirty-six cases; in Metteauer's one in forty-two; in Mott's one in fifty. Dr. Allan P. Smiths, of Baltimore, operated successively on fifty-two without a death, and in my own practice seventy-four cases, including patients of all ages (seven of which were over 60), were cut without the loss of a single patient. Two deaths then occurred in succession, neither of which could be attributed fairly to the operation. I afterwards cut sixty with one death. I feel certain that if correct reports could be obtained from all American surgeons who have practiced the cutting operation they would exhibit results equally as good as those referred to.

After a careful consideration of the data presented, I think it may be concluded that some of the cutting methods of operation should be chosen:

1. In children under 16 years of age.
2. In cases in which large and hard stones are to be dealt with.
3. In cases of encysted and of sacculated stones.
4. In cases of old, indurated, tortuous strictures of the urethra, especially when associated with fistulæ, and in persistant intolerance of the urethra.
5. In prostatic enlargements which interfere with the ready introduction and manipulation of instruments.
6. In prostatic overgrowths of the central portion, or in tumors of the prostate which may be removed during the operation.
7. In prostatic enlargement associated with residual and putrid urine.
8. In cases in which tumors of the bladder complicate stone.
9. In cases in which a severe chronic inflammation of the bladder is present and persistent.

The choice of crushing methods is based on four conditions:

1. Adult patient.
2. Capacious and tolerant urethra.
3. Small or medium sized stone, or, if large, of soft consistence.
4. Bladder capacious and free from severe and persistent chronic inflammation.

When selected under these circumstances, no operation in the whole field of surgery is more satisfactory or more successful in its results. The hazard of a well conducted crushing operation under these favorable conditions is *nil*; and if a

calculus could be detected and submitted to treatment in its early stage, before the general health is deteriorated and local involvements have taken place, no other mode of procedure would be desirable. Some enthusiastic surgeons are so confident of its innocence in all conditions that they have almost given up other plans of operation; but when the practice is extended much beyond the limit of the conditions above mentioned, the beneficial results are not equal, in my opinion, to those obtained from a well chosen method of lithotomy. To secure eminently successful and brilliant results from crushing, I am sure that cases submitted to either lithotrity or litholapaxy should be selected with the greatest judgment and discretion.

The old method of lithotrity, which advocated short sittings, with brief use of instruments, and left the expulsion of the fragments to the efforts of nature, has been almost completely superseded by the new method of Bigelow, in which stones are broken up so thoroughly by repeated application of the lithotrite, that all fragments may be evacuated through the aspirating tube and the entire operation completed in one sitting, however prolonged it may be. The great advantage of this method is in the rapidity of cure, the prompt removal of all fragments from the already overburdened bladder, and the brilliant success attending it. It is certainly applicable to a larger range of cases, is far more successful than the old method, and should be chosen, as a rule, in all cases in which crushing is indicated.

Notwithstanding an endless variety of cutting operations have been practiced since the days of Celsus, a few of which are regarded as valuable at the present time, no single method of lithotomy has received the unqualified approbation of the profession. Several of them possess merit, and it is the duty of the surgeon to familiarize himself with the minute details of all of the recognized procedures, in order that his resources may be multiplied. It is no doubt true that an operator becomes more familiar with an operation which he has often practiced, and will execute it with greater skill and safety; yet it is no less his duty to consider each case which comes under his observation, and to select that mode of operation which is best calculated to relieve the patient.

Some distinguished but ultra-enthusiastic surgeons have insisted that every cutting operation should be done by the supra-pubic method.

The supra-pubic operation, originated about the middle of the sixteenth century, soon fell into disuse, was revived by Mercier, and soon after extensively practiced by many of the great lights of that era, including the renowned Cheselden; but, owing to its great fatality, it soon fell into disrepute and was supplanted by the perineal operation. In 1879 it again came to the surface, and has since been growing in favor through the advocacy of Dulles, Peterson, Thompson, Guyon, Périer, and others.

Statistics of the operation as formerly practiced show the mortality to have been 30 per cent. Modern statistics, with all the improvements in the technique of the operation, and with the advantage of antiseptic appliances, show no better results. Statistics have further shown that the larger the stone, the safer, in comparison with the lateral, is the high operation, but that in stones less than an ounce in weight the mortality of the supra-pubic is greatly in excess of the perineal operation. I cannot, therefore, acknowledge that the supra-pubic operation is the only cutting method which should be practiced, but that it is one of the methods which should be chosen under certain circumstances. It has its advantages, and there is no doubt that it is the best operation when judiciously chosen. It should be selected for the extraction of calculi which are too large to be brought through the perineum without bruising and tearing the soft parts, and too hard to be fragmentized through the incision in the perineum. It should be chosen for encysted stones and for stones complicated with tumors of the bladder. As a general rule, the dangers attending this mode of operation are much greater than those attending the perineal method. It is without doubt easy of execution and certainly avoids injury to the rectum and interference with the genital apparatus.

The lateral method, modified and improved by Cheselden in the seventeenth century, and but little changed since, is more frequently resorted to than any or all other cutting operations; yet it does not satisfy anatomical requirements; its route to the bladder is not direct, there is a want of parallelism between the external and internal incisions, and it does not afford more space for the passage of the stone than some other perineal incisions.

There has been a growing conviction in the profession that incisions made in the side of the perineum are attended with more serious consequences than those limited to the centre; that severe hæmorrhage is more likely to follow lateral than central incisions, and the capsule of the prostate gland more likely to be divided.

The bilateral offers more space for the passage of a very large stone, but possesses no other advantages, and is objectionable because many important parts are divided which had better be avoided.

The median operation reaches the bladder with a smaller section of tissue than any other cutting operation, and a careful examination of the anatomical structure of the perineum clearly indicates that the raphé is the best and most acceptable point for the artificial opening necessary for the extraction of the stone. Nature seems to have purposed the median line for such an operation, for it is merely a fibrous septum formed by the

tendinous union of the perineal muscles, serving to separate the important structures of the two sides and permitting the surgeon's knife to reach and open the bladder without wounding any part of great importance.

The superficial parts of the perineum are composed of highly dilatable tissue, the tension of which is maintained by the raphé itself. If this is divided longitudinally, the dilatability becomes very great. Now, if the deeper seated parts were as dilatable as the superficial, the median would be, of all methods, the one to be chosen; but the prostate gland, with the aggregation of vesical muscular fibres surrounding it, offers a serious obstacle to the dilatation of the neck of the bladder, and the extraction of a calculus of considerable dimensions would be followed by dangerous bruising and laceration of the neck of the bladder; nor can instruments for fragmentizing the stone be safely used through such an incision. Stones which could be safely withdrawn in the median operation can be easily dealt with by crushing, as a general rule. If, however, to the median there is added a bilateral incision of moderate extent in the prostate gland and the muscular fibres encircling the neck of the bladder, the dilatation is capable of being carried as far as in the superficial parts. After a longitudinal section in the raphé extending through the perineal point, and a transverse section of the deeper seated parts, the dilatability of the perineal structure is almost incredible to one who has not tested it, and almost any stone which can pass out of the pelvic outlet may be extracted without any injury to the soft structures.

This is a modification of the median suggested by Civiale in 1829 and named by him "the medio-bilateral." It is certainly the best and safest cutting operation ever devised. The advantages of this over any other method of lithotomy are:

1. *That it opens up the shortest and most direct route to the bladder.* Passing in a straight line from one-third of an inch anterior to the verge of the anus to the neck of the bladder, it facilitates the introduction of instruments and the extraction of calculi.

2. *It divides parts of the least importance.* The incision following the median line does not encounter any structures of importance, nor does the slight bilateral section of the deeper parts do violence to tissues of vital consequence. The section does not pass beyond the limits of the prostate, nor the reflection of the deep-seated fascia. There is very little danger of wounding the rectum if proper precaution be used, although the knife does pass in very close proximity to it.

One of the great arguments used in favor of the supra-pubic and against all perineal operations is the possibility of injuring the seminal ducts, thus unsexing the patient. There is no proof of such injury in any perineal operation. I have paid especial attention to this question, and in a number of sections in the perineum of the cadaver I have found no lesion of the ducts; and the subsequent history of a number of my patients has shown that many of them have become fathers of families, and in no instance has a patient been left in the condition of an eunuch. In the medio-bilateral the incision passes almost directly outward from the sides of the prostatic urethra and could not possibly encounter the ducts. It may happen that an inflammation established in the perineal tissue does sometimes injure the ducts and cause sterility, but there is no proof that sterility is a frequent sequence of perineal lithotomy.

3. *It is almost a bloodless operation.* It is in the absence of this formidable complication that the medio-bilateral is seen to the best advantage.

The ligature and shirted catheter are in constant requisition in the lateral and bilateral operations; but when the incision closely follows the middle line, even if it encroaches on the bulb of the urethra, which it generally does, no vessels of any size are divided, since they have spread, so to speak, on the outer side of the raphé, while the cross section, passing only a few lines from the raphé, encounters no arteries of importance, so that the loss of blood is very small, seldom amounting to half an ounce. This immunity from hæmorrhage depends on the incision being made strictly in the middle line.

4. *It affords a passage for the removal of any calculus which can be safely removed through the perineum, and is the best route for free drainage.*

A frequent objection to the median and the medio-bilateral operation is that the incision made is not sufficiently large to permit the extraction of large calculi. It is true that the median is only suitable for the removal of small or medium sized stones, which, as a general rule, may be easily and safely removed by litholapaxy; but when a little nick is made on either side of the neck of the bladder, constituting the medio-bilateral operation, the deep-seated parts will admit of extension to almost any degree necessary for the removal of stones, which should be extracted through the perineum. I never make the bilateral section more than six lines in extent —just large enough to admit the finger into the bladder; the dilatation of the deeper parts is then easily and safely effected, provided it is done slowly and gently. To this part of the operation the adage, "festina lente," is peculiarly applicable. Its importance cannot be too strongly impressed on the operator. In some cases, especially in persons advanced in life, the neck of the bladder is firm and undilatable, even under continued gentle manipulation. When such is found to be the case, the incision should be enlarged to a sufficient extent on each side with a probe-pointed bistoury, guided by the finger, to permit the easy

extraction of the stone. When a stone is too large to be removed through the incision without doing violence to the soft parts, it should be fragmentized with suitable instruments and the fragments extracted through the perineal opening.

The crushing and withdrawal of stones through the perineum has been regarded with an unnecessary degree of fear. It is incomparably safer than forcible extraction of large calculi. That it is a safe resort is attested by numerous instances in which soft calculi crushed in the blades of the forceps have been removed piecemeal from the bladder without any evident ill effects. This has happened in a number of cases in which I have operated, and in many I have intentionally crushed large stones through the perineal wound without in the least increasing the risk of an operation.

If the stone is too hard to be readily crushed, the surgeon should not hesitate to make a suprapubic section, the success of which is greatly enhanced by the thorough drainage through the lower opening.

4. *It reduces the death-rate to the minimum.*

Possessing, as I think it does, the advantages mentioned, it is my conviction that the medio-bilateral operation, properly executed, is almost devoid of danger to life, and that in the absence of organic disease of the kidneys or other vital organ, every patient submitted to it will recover. It is followed by very little if any shock, by reason of the slight injury to important structures. It limits the loss of blood to the minimum, is seldom the cause of surgical fever, and in a majority of cases no unpleasant symptoms ensue. Patients are usually up in a week, and in from twelve to eighteen days, as a rule, the wound is entirely healed. In six cases in my practice the wounds healed by the first intention, no water passing the wound after the first day.

The statistics of medio-bilateral lithotomy have, so far as I know, never been collected and published. The late Prof. S. D. Gross, in the last edition of his valuable work on the urinary organs, did report twenty-two cases followed by complete recovery. At the meeting of the American Medical Association at Chicago, in 1877, I reported forty-six cases, all successful. Since that time I have operated by the same method on ninety cases, making in all 136 cases, with three deaths.

The success of the medio-bilateral operation has not been limited to my practice. Dr. J. R. Weist, of Richmond, Ind., has reported to me six cases in his practice with successful results. The late Dr. J. W. Thompson, of Paducah, reported twelve cases, all successful. My son, Prof. C. S. Briggs, of Nashville, has performed the operation in five cases, all successful. Dr. Wm. Wright, of Huntingdon, Tenn., operated on a boy 12 years of age with success, and Dr. D. M. Evans, of Union City, Tenn., did the operation on an adult with success, making an aggregate of 183 cases, with three deaths, one in sixty-one.

In conclusion I make the following deductions:

1. No operation is adapted to all cases.
2. Litholapaxy is incomparably superior to lithotrity, and should always be practiced in selected cases.
3. The supra-pubic should be chosen for extraction of very large and hard stones.
4. The medio-bilateral should be chosen in all other cases, because:
   a. It affords the shortest route to the bladder.
   b. It divides parts of the least importance.
   c. It is the most bloodless operation.
   d. It affords space for extraction of any calculus which can be removed through the perineum.
   e. It affords the best route for drainage.
   f. It reduces the death-rate to the minimum.

THE NON-SURGICAL TREATMENT OF STRABISMUS CONVERGENS.

Read in the Section of Ophthalmology at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

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The non-surgical treatment of strabismus convergens is not a novelty. The text-books on ophthalmology mention the fact that some cases of strabismus convergens, if taken in time, notably in the periodic phase, are amenable to treatment, but the majority of authors quickly dismiss the subject, and hasten on to an elaborate description of the more popular operative process. There are, however, some exceptions, and among these, Dr. Landolt's excellent book on "Refraction and Accommodation" is prominent; with the clearness and precision which always characterize his work, he enters minutely into the details of the non-surgical method, pointing out its advantages and giving rules for its execution. In this book he strongly advocates its careful adoption; and in his paper read before the Ninth International Medical Congress, he again sounded a note of warning against operating on cases of strabismus convergens without previously testing with great care the action of the muscles when the proper relation between accommodation and convergence is reëstablished.

It is to be regretted, however, that Dr. Landolt did not emphasize more how much can be accomplished by restoring the balance between these two functions. If the tendency of the age were toward conservatism, a word would have been sufficient, but the trend is quite in the contrary direction and in this matter, at least, it is time to put on the brakes. The treatment of strabismus has suffered from careless execution in the past, and there is danger that it may again suffer from

indiscriminate and hasty operations in the present. It is really appalling to witness the assurance with which many tyros in ophthalmic surgery perform tenotomy, without a moment's hesitation as to the future results, and plenty of evidence can be adduced to prove that some who are not tyros, firmly believing that tenotomy is the only reliable method, operate too hastily to be consistent with safety. Why this condition of things should be so prevalent is difficult to explain, unless by the supposition that the former are ignorant of the claims that have been made for the non-operative treatment, and that the latter ignore them, being unwilling to allow sufficient time for this method to accomplish the result. That the result is accomplished in time, Nature, our best teacher, is constantly manifesting, for it is a well known fact that many cases of strabismus convergens are spontaneously corrected as the patient advances in years. If Nature accomplishes this feat when left to her own resources, is it not worth while to investigate her method of operation and profit by her teaching?

It is universally admitted that concomitant strabismus convergens, in hypermetropes, is caused by the excessive tension of accommodation necessary for distinct vision, overstepping the limits of the negative range of relative convergence; or, in other words, by the tension of accommodation exceeding the quota of the positive range of relative accommodation. The balance between these correlative functions being destroyed, over-convergence takes place, clear images are obtained at the expense of binocular vision, and strabismus is established. It should not be forgotten, however, that although the balance between accommodation and convergence is destroyed, their correlation is not abolished, and that it is in obedience to the law of reciprocal action which governs it, that over-convergence supervenes, and is maintained. On the survival of this correlation, the possibility of correction entirely rests.

Nature meets the difficulty by gradually limiting the range of accommodation, thus restricting the patient from excessive tension of accommodation, while it leaves the range of convergence unimpaired. When in the course of time these two functions approach equilibrium, the inciting cause having ceased to be operative the strabismus disappears, if the internus has not become permanently shortened. It will be noticed that the main point, in Nature's process, is the restoration of equilibrium between accommodation and convergence. The non-surgical method, in view of this fact, starts out to restore the balance between these functions, by removing the necessity for excessive accommodation, *i. e.*, by correcting the error of refraction. This, however, is not usually sufficient. Habitual accommodation persists in spite of optical correction. Mydriatics must be brought into operation, and by this means, the contracted ciliary muscle is temporarily set at rest. Then, if the internal rectus is not permanently shortened, a sometimes rapid, but generally a gradual relaxation of the muscle takes place, and *pari passu* the squint is diminished or corrected. In cases of periodic strabismus quite a rapid amelioration may be anticipated, and in many cases of alternating and in some of the established monocular form, the result is at times surprisingly quick. In the latter class of cases, however, an immediate correction is not to be expected, and when, as it usually happens, the deviating eye is quite amblyopic, something should be done in addition, to improve its vision, bring it into action and thus expedite the correction.

Experience teaches, and this is the point, that sooner or later the squint is corrected in a large percentage of the cases. Of course there are some cases in which the internal rectus is hopelessly shortened; in these tenotomy is the only remedy, but it must be first ascertained whether the internus is thus shortened, and this cannot be determined by correcting the ametropia and instilling atropin for a week. And now we have reached the point, where I will be found at issue with many of my professional brethren. A great many ophthalmologists claim that after having properly corrected the ametropia, instillations of atropin for a week will suffice to effect all the change in the degree of convergence that can be expected; in other words, that the muscle in this time has reached the limit of extensibility, and, in accordance with this belief, they proceed to operate at the expiration of this period, and before in many instances. The claim is erroneous, for I have repeatedly witnessed a gradual decrease in the angle of convergence, extending over weeks and months, and although it must be admitted that a case which has not been at all affected by atropin in a week, does not give great promise, the treatment must not be considered a failure until three or four weeks have elapsed. If gradual improvement is noted during the first week, and by careful examination the least amelioration is detected, the treatment is to be continued, even though it may take a long time, in the hope of securing a perfect correction and possibly a cure, without injuring the integrity of the muscle.

It may appear from these statements that I am waging war against tenotomy. Such is not my purpose. In certain cases, nothing can be substituted for a carefully performed tenotomy. But I certainly do protest against hasty operative interference when Nature, properly assisted by science, can and does accomplish the result. I am pleading for the internal recti muscles. Tenotomy needs no champion. But the interni most certainly need a protector.

The assertion that tenotomy of the internal rectus in concomitant strabismus convergens is a very simple operation and devoid of all danger

is, to say the least, as misleading as it is common. The technique of the operation is indeed simple, but the delicate discrimination requisite to decide, first, whether an operation is necessary, then what operation is indicated and, finally, how much of an operation to perform, requires an amount of judgment which at once places this operation beyond the pale of extreme simplicity. The second clause of the assertion is absolutely untrue. For if tenotomy is performed without previously having given the non-surgical method a thorough trial, the number of cases in which this method succeeds, will indicate the number which the operation over-corrects. In other words, if in a given case the angle of deviation be equal to 40° and it can be reduced without operative interference to 10°, and the operation is performed without giving this method a thorough trial, then all that goes to correct over 10° is over-correction, and in the course of time, an insufficiency of the interni and possibly a divergent strabismus will supervene.

The principal objection raised to this method is that tenotomy does in a few days what it takes several weeks and even months for the other method to accomplish. Now, in the first place tenotomy, if carefully performed, does not accomplish the result in so short a time; and in the second place, it should be borne in mind that the object of every physician is to do that which is ultimately best for the patient. If a case of strabismus convergens is operated before a thorough course of treatment has been carried out, it is simply trusting to chance whether the eyes are to remain parallel, or in the course of time suffer from insufficiency of the interni, or exhibit divergent strabismus. Time, which plays so important a part in this objection, sinks into insignificance and a matter of no consideration, when compared to the possible future discomfort of the patient. This objection certainly loses strength when analyzed.

The second objection is that while the method may be true in theory, it is impracticable in its application, and when put to the clinical test results in failure in the majority of cases. This being a practical objection, a practical answer is desirable, and this is best done by the recital of facts, thus allowing these to speak for themselves.

The danger of hasty operative interference was forcibly brought to my notice about nine years ago, when after having used atropin for five or six days, I operated on a very marked case of established strabismus convergens. I was in the habit of allowing the atropin more time to do its work, but there was so much deviation in this instance, that I considered the operation perfectly safe. The result immediately after the operation was very satisfactory, although slight convergence persisted, but about five months afterward the child was brought back to me with a very perceptable divergent squint, and the mother expressed herself very strongly on the subject of operating on eyes and making them go "the other way." From that date I have had no more cases of operative divergent strabismus, of my own manufacture, because I have never operated upon a case of strabismus until I had become perfectly satisfied that the non-surgical treatment was insufficient. My experience with this method has been uniformly gratifying, both as a curative process and as a preliminary process to the operative treatment, and I have always strongly advocated its use both in the lecture room and in the clinic. The patients were always found perfectly willing to undergo the course of treatment, and in many instances a decided preference in its favor was expressed. The discomforts accompanying the use of the mydriatic, when complained of, were much mitigated by the use of stronger glasses for near work, and the orthoptic measures; exercises for the amblyopic eye, etc., were quite well followed in the majority of cases. The latter, however, it must be admitted is the most difficult part to have successfully carried out, but then the orthoptic measures are not the incumbrance of this method alone, for if it is desired to obtain an ideal cure of strabismus, *i. e.*, binocular single vision, it will be necessary to bring these measures into operation as a compliment to tenotomy.

In the clinic a good deal of difficulty is experienced in prevailing upon patients to strictly follow out the directions given for eye exercises; for this reason I have not laid so much stress on this part of the treatment in clinical practice. And in order to ascertain the results obtained by correction of the ametropia and the use of atropin alone, I began on the 1st of January, 1889, to keep a private record of all the cases which applied for relief of this deformity in my service at the Illinois Charitable Eye and Ear Infirmary. The record is not as complete as might be desired, but it nevertheless shows in a conclusive manner what can be accomplished by the non-operative treatment.

The method pursued was as follows:

1. Measurement of angle of convergence, obtained with perimeter by Landolt's method. Examination of motility of squinting eye. Ophthalmoscopic measurement of refraction. Subjective examination of manifest hypermetropia. Test of vision. Instillation of atropin once or twice a day for a week, then measurement of angle of deviation. Measurement total hypermetropia.

2. *Treatment:* Glasses were prescribed correcting the total ametropia; atropin to be used daily until parallelism was obtained. Then gradual decrease of dose; until accommodation was performed without over-convergence. If after the effects of atropin had passed off, over-

convergence reappeared, atropin was again ordered until desired result was obtained. The patient was then discharged with instructions to use the glasses constantly, and report if any tendency to squint should be noticed.

From January 1st to June 1st, twenty-five consecutive cases are recorded. Of these there were of periodic strabismus 3, 1 cured, 2 much improved; 1 (angle of deviation decreased from 25° to 5°). Alternating strabismus, 1 case, improved, axis nearly parallel. Established monocular strabismus convergens, 21 cases. The right eye deviated in 15, the left in 5.

Results: In 10, parallelism. In one of these slight divergence was noted, due to operation 3 years ago; 3 much improved, angle ranging from 5° to 8°; 5 not affected by treatment; 3 no record.

Parallelism was recorded in two or three cases, while still under atropin. Unsatisfactory as this may seem, it is so only in appearance, for if parallelism can be induced with atropin, it is only a question of time when it will continue without the mydriatic.

As children give very unsatisfactory answers when tested for glasses, they were prescribed by ophthalmoscopic measurement made under the effects of atropin. Measurements made before using atropin are unreliable. I may add that no difficulty was experienced in making the examinations and that the patients or their parents, were perfectly willing to procure the glasses and follow out the course of treatment. The details will be found noted in the tabulated record appended.

Without pretending to draw any positive conclusions or make sweeping generalizations from the twenty-five cases, the number being too small, I present them as illustrative of what the non-surgical treatment can accomplish even when deprived of that most valuable auxiliary, orthoptic exercises. To the fact that the record is not complete enough to satisfy the hypercritical, I am perfectly sensible, but the most important data will be found noted with as much accuracy as circumstances would permit. Out of twenty-one cases of confirmed monocular strabismus convergens, ten were corrected, and three have been so much improved, that total correction is simply a question of time. Of three there is no record. Only five cases remained unaffected, and will be operated upon in the near future. Does not this record justify a thorough trial of the non-surgical method?

I beg you to believe, gentlemen, that I should not have presumed to present myself before you as an advocate of this method of treatment, if armed only with an experience derived from so scant a display of cases, but I am supported by a profound conviction of its value, the result of observations ranging back over nine years, during which I have given these cases considerable attention; and the motive which prompts this paper is not I assure you, a spirit of criticism, but an earnest desire to see a method which I know to be good, put more generally into practice. Careful observation and inquiry have elicited the information that hasty operative interference in concomitant strabismus convergens is unfortunately very common. Experience teaches that it is attended with danger. Is it not time to call a halt in our rush for radical measures, and consider carefully a method which commends itself, not only by its rationality, but, by its ability to correct in many instances this common deformity, and in others to prepare in the way for a safer and more accurate operative procedure.

Date.	Name.	Age.	Duration.	Diagnosis.	Degree.	Refract.	Vision. R.E.	Vision. L.E.	Treatment.	Duration.	Remarks.
Jan. 10.	A. S.	14	. . .	R.E.S.C.	50	Hm. 3 H. 5.	20–30	20–20	Oper. 3 yrs. ago.	May 2 (3 weeks).	Slight divergence.
" 26.	R. D.	13	2 years.	R.E.S.C.	35	Hm. 3 H. 3.	20–30	20–20	Atr. glass. . .	Mar. 18 (3 "	Much better.
Feb. 7.	A. P.	15	14 yrs.	R.E.S.C.	25	L.E.H. 3 R.E.H. 5	. . .	. . .	" " . . .	Mar. 14 (3½ mos.)	No effect (Aug. 20).
" 9.	C. L.	5	10 mos.	R.E.S.C.	32	H. 2.50.	. . .	. . .	" " . . .	May 8 (3 mos.)	Much better.
" 16.	C. B.	7	7 mos.	R.E.S.C.	22	H. 4.	. . .	. . .	" " . . .	April 23 (2 mos.)	Corrected.
" 16.	F. C.	15	15 yrs.	R.E.S.C	25	H. 2.	20–100	20–20	" " . . .	May 15 (3 mos.)	Much better.
" 21.	M. S.	9	. . .	All S.	20	H. 5.	. . .	. . .	" " . . .	"	"
Mar. 12.	T. M.	6	3 yrs.	R.E.S.C.	45	H. 2.	A.	G.	" " . . .	April.	No improvement.
" 12.	V. O'K.	10	7 yrs.	P.S.C.	25	H. 6.	. . .	. . .	" " . . .	April 28.	Parallel nearly.
" —	K.O.M.	12	. . .	R.E.S.C.	50	H. 5.	A.	G.	" " . . .	April 18.	Corrected.
" 21.	A. K.	10	. . .	L.E.S.C.	20	H. 4.	20–40	20–100	" " . . .	April 28.	"
" —	M. T.	11	7 yrs.	R.E.S.C.	30	H. 3.	20–50	20–20	" " . . .	April 18.	"
" 16.	E.M.B.	8	. . .	P.S.C.	15	H. 4.	G.	G.	" " . . .	April 11.	"
" 16.	E. V.	5	. . .	R.E.S.C.	15	H. 5.	A?	. . .	" " . . .	April 25.	"
April 15.	G. M.	5	. . .	L.E.S.C.	25	H. 4.50.	. . .	A.	" " . . .	May 4.	No better.
" 25.	P. B.	7	5 yrs.	L.E.S.C.	30	. . . . .	. . .	. . .	. . . . .	. . . . .	. . . . .
May 2.	M. S.	6	2 yrs.	R.E.S.C.	40	. . . . .	. . .	. . .	Atr. glass. . .	May 16.	No better.
" . .	L. B.	9	. . .	L.E.S.C.	35	H. 2.	G.	A.	. . . . .	. . . . .	Better.
" . .	W. T.	20	19 yrs.	L.E.S.C.	55	. . . . .	. . .	. . .	. . . . .	. . . . .	Did not return.
" 14.	C. D.	19	. . .	R.E.S.C.	40	R.H. 1 L.H. 1.50	20–50	20–20	. . . . .	. . . . .	. . . . .
" . .	D. K.	2	. . .	P. S.	. .	H. 3.50.	50–20	20–200	Atr. glass. . .	June 1.	Corrected.
May 16.	A. B.	13	12	I. E.S.C.	35	H. 6.50.	20–40	20–20	" " . . .	June 4.	"
" 16.	T. H.	16	9 yrs.	R.E.S.C.	50	H. 4.	20–200	20–20	" " . . .	June 14.	No better.
" 18.	R. H.	19	18 yrs.	R.E.S.C.	30	H. Ast.	20–60	20–20	" " . . .	June 4.	Corrected.
" 24.	M. M.	7	4 yrs.	R.E.S.C.	25	H. 3.	. . .	. . .	. . . . .	. . . . .	"

Parallel, 10; diverg., 1; M. B., 6; (3 nearly parallel. N. B. 5 N. R. 3. (3 much improved.

170 State Street.

DR. KNAPP said: For many years I have been

in the habit of trying the non-surgical treatment in all young cases. A certain number have been cured, but the number was not so great as in Dr. G.'s series. It is a minority, perhaps not even what is called a respectable minority; certainly it does not reach 20 per cent. I have never operated before a fair trial with glasses has been made, for at least three months, mostly six months or a year or two. It seems that Dr. Gardiner has not drawn into the circle of his investigations the remaining latent convergence, which in my experience is constant or almost constant, which exists in most cases without asthenopic complaints.

DR. AYRES, of Cincinnati, said that he considered the sentiment of the paper in the right direction. We all operate much less frequently than we did a few years ago. He had a case where glasses were worn for eight years, and the eyes were then parallel and there were no asthenopic symptoms. I encourage patients to use glasses, and try to keep them under observation for a year or two, if possible. I would hesitate to operate unless I could not see the effects of glasses for a period of a few months at least.

DR. KEYSER: I have been for some years carrying out the idea that Dr. Gardiner has presented, but I must suggest that a longer time be given before any operations are made. I agree with Dr. Knapp that it is necessary to wait a longer time than two or three weeks. It is necessary to wait three, four and six months. I have had some excellent results with the correction of the ametropia only after three to six months. The operation of tenotomy should not be made too soon after the correction. I always wait a considerable time, especially if I see any changes for the better are showing themselves. I lately exhibited to my class a boy with most perfect success of the correction of the strabismus with the correction of the ametropia, which took six months for the cure.

DR. J. L. THOMPSON, of Indianapolis: Every year added to my experience makes me more cautious in recommending an operation for the cure of strabismus convergens, and causes me to urge the more frequent trial of the proper lenses instead. We should do all in our power to educate the people concerning this matter. Often have I prescribed glasses for children under 3 years of age and in one case before the second year, and in several this plan has sufficed without my having had to operate. Again, in cases where this has not been sufficient after six months, atropin has been used for three months in addition to the glasses, but the parents have also been urged to practice the defective eye many times a day. They must not simply be told that this is necessary, but they must also be informed that the state of the child's vision is almost altogether within their power. They must carry this injunction as did the Jews their laws, as frontlets between the eyes, written also on their gate posts, that, going in and out, to be read and practiced. Operations for strabismus are rarely even what we desire them to be. Perfect successes are seldom obtained, and in some, when the eye has become amblyopic from exclusion long before the operation, we may have an excellent immediate result from strabotomy, and this may continue for months or a year; and yet, in some of these, when they step into our offices, years afterwards, with their eyes turned out even more than they formerly turned in, such a terrible feeling of goneness comes over us that we wish they never had been touched. This must occur to all operators, no matter how skilful or expert they may be. If, then, perfect results rarely obtain from operative procedure in such cases, we should so educate the profession and, through them, the community, as to cause them to seek early advice, in order that benefit from glasses and other treatment may be entered upon.

DR. CHISOLM said that there was a general disposition to defer operation in crossed eyed children until they reach 8 years of age at least. We are frequently consulted by much younger children. During the delay or interval before the operation of tenotomy a good length of time admits of the use of glasses and atropin to allay excessive muscular spasm. For months this course is usually pursued, but my experience is that I do not get the large percentage of cures that others have obtained. I should think that 10 per cent. of cures would be a larger percentage than my experience would warrant. Yet the method was a good one and is now generally adopted.

DR. STEVENS said: The view of procedure in strabismus will depend somewhat upon the view which we take of the nature of the cause of the defect. If we accept without question the theory of our great master, Donders, we shall act differently from what we would do were we to accept that of Schweigger and many others. If we are dealing with a simple functional trouble, we treat it as a functional trouble. If, however, we are dealing with anatomical conditions, we must deal with it by mechanical measures. There is a large proportion of cases of apparent convergent squint which, in my opinion, depend upon a vertical deviation. If we operate for convergent squint in such cases, we shall of course induce, at a later period, divergent strabismus. We can not, it appears to me, make sufficiently accurate estimations of the angle of strabismus by the perimeter. We should use the diplopia tests, and a full correcting operation should only be done by these tests.

In closing the discussion Dr. Gardiner stated that he had been misunderstood regarding the length of time he would follow up the treatment, the period of one month being the *minimum limit in all cases.*

ANÆMIA AND NASAL STENOSIS.

Read before the Section of Laryngology and Otology, at the Fortieth Annual Meeting of the American Medical Association, at Newport, June, 1889.

BY H. HOLBROOK CURTIS, M.D.,
OF NEW YORK.

I think we may be justified in assuming that recent progress in nasal surgery has instituted a new era in laryngology, otology and rhinology. The reflex neuroses dependent upon nasal stenosis have been elaborated.

Simple asthma and hay fever, in a vast majority of cases, have been brought within the list of curable complaints, and to-day the most stubborn opponents to the employment of free surgical procedures within the nostrils are one by one entering the van with those who have long since disregarded the ancient traditions of laryngology. In otology, chronic otitis media and tinnitus are admitting of better explanation, and a rational treatment is being instituted whereby, to the credit of the rhinologist be it said, thousands of the deaf and distracted are finding themselves susceptible of relief. If the example set by this Association, in uniting the departments of otology and laryngology, be followed by our local societies, the science of otology may be advanced beyond present conception. It is very easy to generalize upon the brilliancy of certain operations, and enough has been written and read before the various laryngological societies of the United States during the past five years to conclusively prove that good work has been done and much benefit derived therefrom. It is the province of this paper, however, to touch upon a single condition, namely, anæmia and its relationship to nasal stenosis. In a paper read before the Ninth International Medical Congress at Washington in September, 1887, I attempted to classify the various deformities and conditions which produce stenosis, and to elaborate the great gain to be derived from radical surgical procedures in their treatment. At that time the facts were deduced from some 150 cases operated upon with the nasal saw, and about 75 in which was employed the nasal trephine. The conclusions were simply drawn from the great constitutional relief experienced by the patients, and from personal observation. The one item of mathematical accuracy in the cases there described, however, was expressed in the reported gain in body weight. Since that time my operative cases with the trephine have exceeded 400. Aside from the fact that one might be justified, from these figures, in forming a pretty exact estimate as to the value of the work, it has been my endeavor to keep more exact data as to the constitutional improvement after operations for the relief of nasal stenosis. In my recent cases statistics as to weight, chest measurement, capacity of lungs, and spectrum analyses of the blood are carefully tabulated. While we will not go into the details of the quite unique results the remainder of the table shows, let us dwell for a few moments upon the consideration of the analysis of the blood.

The improvement in color of the skin, which phthisical patients especially exhibited after the relief of a marked stenosis, suggested the possibility of keeping a record of the relative amounts of oxyhæmoglobin existing in the blood at the time of operating, and again some weeks afterward. The most ingenious hæmatoscope of Hénocque enables one to do this with even greater exactness than with Fleischl's hæmometer, and also offers special advantages in determining the "activity of reduction," so called in the change of arterial blood to venous. The spectrum of oxyhæmoglobin may be obtained by holding the spectroscope at an angle over the thumb nail and observing, after quickly ligaturing the thumb below, how soon the two absorption bands of oxyhæmoglobin disappear; or, in other words, in how many seconds the oxygen is absorbed by the capillary network, the spectrum of reduced hæmoglobin being invisible by this method. The activity of reduction is altered by fasting, exercise, repose, cold, heat and electricity, and more or less by all pathological conditions. In a state of health the absorption bands disappear in about one minute; in altered physical states the limitation varies between twenty-five and ninety seconds. This fact is assumed by Hénocque to possess a clinical importance in certain diseases, but it does not interest us here.

The hæmatoscope of Hénocque consists of two glass slides superimposed in such a manner that they are separated three-tenths of a millimetre at one end, but in contact at the other, the length of the slide being 60 millimetres. We thus have a prismatic space between the glass slides varying from zero to three-tenths millimetre, into which we allow a few drops of blood to flow. Then, by placing the slide under the spectroscope and moving from right to left, for every millimetre we advance the blood layer increases five one-thousandths of a millimetre (five micra). In a series of careful experiments with solutions of oxyhæmoglobin, normal blood, etc., it has been found that a solution of 14 per cent. of oxyhæmoglobin of a thickness of 70 micra (70 one-thousandths of a millimetre) presents under the spectroscope the two characteristic absorption bands of oxyhæmoglobin between the lines D and E. The division of the lower plate into a scale of 60 millimetres makes it possible to express in thousandths of millimetres (micra) the exact thickness of the blood layer, and hence enables the calculation of a table which at a glance shows the percentage of oxyhæmoglobin; for if we are unable to get the bands of oxyhæmoglobin distinctly and of equal obscurity until the slide has been moved to the division 28 millimetres read on the

scale of the lower slide, we have required just twice the thickness of the blood layer to obtain the characteristic spectrum; hence the blood contains but 7 per cent., or one-half the normal percentage of oxyhæmoglobin. One has consequently only to read the number on the scale corresponding to the slit of the spectroscope and, by consulting the table, ascertain immediately the percentage of contained oxyhæmoglobin. By this method of examination, which is the quickest and as accurate as any of the methods yet advanced, we have a tolerably definite standard by which to ascertain the condition of the blood.

J. Loos has reported that careful tests made in von Jaksch's clinic have led him to place more reliance in the hæmatoscope for rapid demonstration than on any of the numerous hæmometers, hæmatimeters, etc., yet discovered. The rapidity and ease with which this instrument may be employed makes the method contrast sharply with the tedious detail of other means. By it one is enabled to estimate the improvement of a patient while taking iron, and to observe, unfortunately, that the percentage of oxyhæmoglobin decreases at once upon discontinuing the dose. On the other hand we demonstrate that the increase brought about by opening the nasal passages remains constant. The physiology of nasal breathing has been made the subject of a carefully prepared thesis by E. Bloch, of Freiburg[1], who has determined, by a most exhaustive series of experiments, the laws which govern nasal respiration, the most important of which is the following: "Inspired air, in its passage through the nose, gains in heat five-ninths of the difference between its temperature and that of the body," which, expressed mathematically, would be: $x=\frac{5}{9}(98\frac{1}{2}° \text{ t.})$, t. being the temperature of the inspired air; x will represent the added increment of heat resulting from nasal respiration. The important bearing this has upon the respiratory act is self-evident, and it is chiefly due to the restoration of a process which adds so much heat and aqueous vapor to the inspired air as does nasal breathing that the extraordinary good done the individual is accounted for.

Patients with nasal stenosis, as will be seen by referring to the tables, are invariably anæmic. The twenty cases given below are taken without selection, and represent an average of the blood analyses found in these conditions.

It is not the intention of this paper to inquire further into the specific causes which bring about the increased oxidation, as shown in the tables, nor to attribute to the relief of nerve strain, or to the increased lung capacity, their respective shares as elements of constitutional improvement, but to simply advance the proposition that anæmia is due in very many cases to nasal stenosis, a fact which was commented upon by me several years before I made use of the hæmatoscope to demonstrate it.[2]

Time elapsed after operation.	Weight.	Chest.	Spirom.	Oxyhæmoglobin. Per cent.	Increase Per cent.
No. 1, 8 weeks.	130–134½	30 –30	205–215	6.9– 9.3	2.4
No. 2, 8 " .	132–137	31½–32	245–256	7.5– 9.5	2
No. 3, 10 " .	143–150	33¼–33¾	185–190	5.5– 9.3	3.8
No. 4, 10 " .	126–129	31½–31½	200–219	7.5– 8.5	1
No. 5, 13 " .	115–126	30 –32	215–265	4.5– 9.5	5
No. 6, 3 " .	140	. . . . .	. . . . .	9.5–10.0	0.5
No. 7, 4 " .	134	. . . . .	150–165	9.3–11.0	1.7
No. 8, 1 " .	. . . . .	. . . . .	. . . . .	10.0– 9.3	0.7
No. 9, 10 " .	139	. . . . .	. . . . .	6.0–11.5	6.5
No. 10, 6 " .	120	. . . . .	145–155	12.0–12.5	0.5
No. 11, 3 " .	196–200	42	320–330	14.0–14.0	. . . . .
No. 12, 4 " .	92	. . . . .	. . . . .	7.8– 9.0	1.2
No. 13	140–149	. . . . .	190–220	6.5– 8.0	1.5
No. 14, 6 weeks.	127	27½	. . . . .	9.3–11.5	2.2
No. 15	110	28	120	3.5	Refused.
No. 16, 10 weeks.	134	. . . . .	. . . . .	11.5–11.5	. . . . .
No. 17, 8 " .	211	. . . . .	. . . . .	7.5–12.0	4.5
No. 18, 7 " .	126–132	29½	115–130	6.5–13.0	6.5
No. 19, 2 " .	170–171	. . . . .	295–315	10.0–10.0	. . . . .
No. 20, 9 " .	165–168	. . . . .	275–279	9.3–12.0	2.9

The cases presented represent markedly deflected septa, or enchondroses, simple turbinate hypertrophies, or polypi, not being included (in which latter condition the percentage gain is much greater than in the present compilation). It has been the intention to tabulate an average run of patients referred for operation. It may be interesting to take up one or two cases as examples. For instance, No. 5 presents the following history: Girl, aged 18, with nearly complete stenosis on both sides, a mouth breather and profoundly anæmic. Her family physician has considered her trouble to consist of consolidation of both apices of the lungs. In thirteen weeks after freeing the nostrils her entire condition was transformed, her chest having expanded 2 inches, and the sallow complexion giving way to the ruddy hue of health. No. 14 I include as one of the few instances in which I have found a normal blood state with a deflection of the septum narium. The case, however, is that of an athlete whose time is mostly spent in the open air. No. 9 is of interest because of his pronounced anæmia and from the fact that he possessed a hæmorrhagic diathesis, it having been necessary to ligate his extremities to stop the bleeding after operation. This is the only case among those tabulated in which any treatment was combined in order to overcome the impoverished condition of the blood.

By observing very many cases I have come to the conclusion that the increase of oxyhæmoglobin in the blood after operations on the septum is directly proportional to the relief afforded an impeded nasal respiration. This increase is constant and averages about 2 per cent. in the six weeks following operations in which the stenosis does not amount to more than 50 per cent., that is to say in cases where the nose is doing but half its work.

If the amount of oxyhæmoglobin is directly

[1] Archives of Otology, Vol. xvii, No. 4.

[2] "Headaches," by Allan McLane Hamilton.

proportional to the number of red blood corpuscles, this increase may be expressed by an increase of 100,000 corpuscles to the cubic millimetre.

Cases should not be operated upon whose blood shows, by spectrum analysis, lower than 6 per cent. of oxyhæmoglobin. In four cases of alarming hæmorrhage this state was always observed. As reference to the table makes other matters I have touched upon apparent, I will postpone the further consideration of the subject for another occasion.

A CASE OF SCLEROSING MASTOIDITIS OCCURRING SUBSEQUENTLY TO PURULENT MASTOIDITIS INTERNA—OPENING OF MASTOID—EXPOSURE OF DURA MATER—RECOVERY.

Read in the Section of Laryngology and Otology, at the Fortieth Annual Meeting of the American Medical Association, Newport, R. I., June 25, 1889.

BY J. A. LIPPINCOTT, M.D.,
OF PITTSBURG, PA.

Sclerosing or eburnating mastoiditis is a disease characterized chiefly by pain, continuous, grinding pain—pain so remorseless and incessant as to stamp upon the features a peculiar expression, appealing, yet hopeless, like that on the face of the Beatrice di Cenci. The pain centres in the mastoid, but radiates over the whole side of the head. I have seen the pain of mastoiditis eburnans closely simulated by the reflex pain of a diseased tooth; and in suspected cases an examination of the teeth ought to be made by a competent dentist.

The affection is comparatively rare in this country—at least not many cases have been reported in the journals. My own experience is limited to two cases, the first of which was reported at the meeting of the American Otological Society in July, 1884, and was that of a young lady who, after twelve months of treatment, local and constitutional, and of the most varied character, was finally operated upon, the mastoid being opened with a drill down to the antrum. Complete relief followed the operation, but unhappily lasted only a year. A second and more complete operation has been since suggested, but the patient is not yet ready to give her assent.

The following case, apart from the rarity of the disease, seems worthy of record on several grounds,—the origin of the trouble, its obstinacy, the opening into the cranial cavity, and the final result.

Miss F. M., æt. 24, had in childhood had frequent attacks of earache on the left side but never otorrhœa. These attacks gradually ceased, but she continued to suffer frequently from quinsy. In Sept., 1885, while pursuing her occupation—dentistry—in St. Paul, Minn., she had what she describes as a peculiar attack of sore throat, affecting the left side, which presently disappeared, leaving a severe continuous aching in the mastoid region. Leeching and other local and constitutional treatment proving ineffectual, Dr. Fulton[1] opened the mastoid and found a large abscess which he carefully washed out. The result was quite satisfactory, the wound soon healing, and the pain being relieved entirely. Six months later, in April, 1886, the earache returned, and from that time until I saw her in the following July, continued to increase in severity. When she consulted me I found the following condition: A vertical, linear, depressed cicatrix behind the ear. Above the scar, slight swelling, rather tender to touch. External auditory canal normal. Mt. slightly shrunken, lustreless, and dusky in color. No light-cone. Watch of forty inches hearing-distance heard on contact. Voice at ten inches. Air conduction better than bone conduction. Eustachian tubes pervious. Politzer bag causes transient distress in left ear. Throat and nares healthy looking. Right ear normal in appearance and function. The pain in the left mastoid was almost constant, but was subject to exacerbations.

In view of the fact that an operation had already been performed, and by so accomplished an operator as Dr. Fulton, I naturally hesitated to subject the young lady to further operative procedure. I must remark, parenthetically, that at this time I was not aware of the previous suppurative character of the case, as Dr. Fulton's report of it had not yet been published. I made the diagnosis of sclerosis, and I supposed the disease to have been sclerotic *ab initio*. I suggested to her family physician, Dr. E. S. Riggs, of Allegheny, that the treatment which he had already instituted be continued. Accordingly, for three months an energetic course of tonics and alteratives was maintained, and various applications, revulsive, and emollient, were made to the painful region.

During this period, instead of diminishing, the pain steadily increased in intensity, necessitating the frequent administration of anodynes. In the latter part of October, at the urgent solicitation of the patient, and with the aid of Dr. Riggs and the resident staff of the Allegheny General Hospital, I made with drills and chisels a pretty large opening about five-eighths of an inch deep in the mastoid process. The bony tissue was dense and firm, the cellular structure having almost completely disappeared. There was some hyperæmia especially of the deeper parts.

This opening was maintained and poultices ap-

[1] This case was without doubt one of those reported in the interesting article by Dr. Fulton in the Proceedings of the 9th International Congress.

plied, for nearly two months. I shall not weary you with details. Suffice it to say that the operation accomplished nothing. The patient's sufferings continued to increase, being but slightly mitigated by the large and frequent hypodermatic injections of morphia administered. Weary, sleepless nights succeeded days of monotonous pain. Convulsions set in. Appetite failed, and emaciation and debility became more and more marked. The face assumed a haggard, almost despairing expression, and the *morale* of the patient became so weakened that the worst was dreaded. Examination of the urine, as well as of the eyegrounds at this time proved negative.

Seven months after the last operation, viz: toward the end of May, 1887, I was surprised by a visit from Miss M., who drove to my office for the purpose of insisting on one more attempt being made. She said she could no longer endure the slow agony, and would prefer to die on the operating table. On consultation with Dr. Riggs, in whose judgment I had very great confidence, it was decided to accede to the patient's wishes. She was therefore again etherized May 25th, 1887; and, the soft tissues, having been well reflected, the mastoid was reopened. My object now was to make as thorough an excavation as I dared. For this purpose a large and deep opening was made as before with drills and chisels; and then the cavity was slowly and cautiously enlarged by means of the conical drill, until the end of my thumb could enter and move freely in the interior. The thickness of the process proved less at one point than I had anticipated, and, on withdrawing the trephine, I found that I had exposed the dura mater. The opening was fully one-fourth of an inch in diameter, and was at the anterior part of the bottom of the wound.

Circumstances prevented my seeing the patient for some time, and the subsequent treatment was conducted by Dr. Riggs, but I learned later that on the termination of the anæsthesia, the pain had entirely disappeared. Convalescence was speedy and uneventful. The wound was kept open for about six weeks, and then allowed to cicatrize. Dr. R. informed me that, the day after the operation, he punctured the dura mater where it bulged into the wound with a hypodermatic needle, and drew off a small quantity of clear fluid.

In Febuary, 1888, Miss R. came to inform me of her progress. She had resumed work in August, two months after the operation, and, with the exception of a very slight earache from cold, in October, she had been absolutely free from pain. She was enjoying excellent health, and her appearance was bright and cheerful. A deep furrow was to be seen in the mastoid process. The membrana tympani looked just as it did at the first examination, and the hearing was also unchanged. A final examination made a few days ago, revealed the same happy exemption of pain, and practically the same local appearances. Moreover, the patient states that she feels that she is entirely cured, since attacks of cold never affect the ear now as formerly.

If it is permissible at all to generalize from my limited experience, it seems to point clearly to two conclusions: first, that no treatment which does not include operative interference is of the slightest avail in the affection under consideration, and secondly, that no operation, which does not involve a pretty complete removal of the internal structure of the mastoid, will be apt to prove permanently beneficial. In the first case a partial operation gave relief for a year. In the second, without reference to the history of the case before coming under my care, one partial operation gave no relief at all; while a second, which left very little of the mastoid remaining except the shell, has conferred absolute immunity from pain, which has continued now for two years, and bids fair to be permanent.

The difference between opening a mastoid for sclerosing mastoiditis and the ordinary operation of perforating this structure for suppurative mastoiditis interna is so great that it can with difficulty be appreciated by one who has not operated on both classes of cases. In trephining for purulent inflammation a few turns of the drill, or a few blows on the chisel, and you have forced your way through a comparatively thin wall, and your instrument finds itself either in a cavity, or among the loose and friable material of the mastoid cells. Besides, you are generally rewarded by the appearance or escape of pus. But, in operating on a sclerosed mastoid, penetration is effected slowly and laboriously on account of the ivory-like density of the bone. Moreover, it is sometimes extremely difficult or impossible to find a cavity at all, no matter at what depth, because the cavity of the antrum, in an old case, is apt to be so encroached upon by the eburnating process as to be almost obliterated. Furthermore, you do not find pus—you do not expect to find it, You simply make what you suppose to be a sufficiently large and deep opening, and then you stop, trusting that the result may be good.

I can not close this paper without expressing my sense of the value of an instrument which I have heard "damned with faint praise." I refer to the conical drill. It seems to me that, in case of penetration into the cranial cavity—and this accident, in operating for sclerosing mastoiditis, it is by no means unprecedented—less harm is likely to be done to the intracranial tissues with an instrument like this, which does its work slowly and steadily, than with a chisel, which may plunge abruptly, in spite of the greatest skill and care, into the lateral sinus. On account of its tapering and rounded form a sudden plunge is impossible, since, even if the apex has made an opening, the body of the instrument is prevented

from entering. Besides, from the absence of any sharp, cutting edge, the contents of the cranial cavity are almost secure from laceration or serious injury.

A NEW DOUBLE CATHETER FOR UTERINE INJECTION.

Read in the Section of Obstetrics and Diseases of Women, at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

BY A. CORDES, M.D.,

ADJUNCT TO THE MATERNITÉ OF GENEVA, (SWITZERLAND); CONSULTING PHYSICIAN TO THE MISÉRICORDE, ETC.

In our days of asepticism every instrument, or part of instrument, must be thoroughly scrubbed in every corner where the microbes take their abode. Following this principle, I had made in Paris a vesical catheter, made of two pieces, one sliding into the other, so as to be separable in two corresponding grooves, and being very easily cleansed with the brush. Of course the blind end, near the eyes, is filled up to the level of the eyes, with metal, so as to leave no corner or uneven space, or cul-de-sac to lodge the dreaded microbes.

That was all right, as long as the vesical catheter alone was concerned, in which the fluid supports no pressure, and which is short. But when I tried to apply this contrivance to the long sound for uterine irrigation in which the antiseptic fluid is forced with some power, I found no maker could make it tight enough; a large quantity of the fluid ran out, along the sides of the grooves. If it was nearly tight then the slide would not run easily in the groove. Moreover it would have been a difficulty almost insuperable for our makers to give to the instrument the sigmoid curve which is so invaluable, for the sliding part would not follow that double curve. Then it occured to my mind that if, instead of having a tube for the access of the fluid in the uterus, (this tube being constituted by the two grooves, as in the vesical sound) and a groove for the return of the liquid with débris, as in Bubin's sound, I could have two open grooves, and the instrument would be very easy to cleanse with a common nail brush.

These grooves in my instrument are converted into tubes by the introduction of the sound in a sheath of soft rubber, which adheres enough to the sides of the grooves to make the instrument sufficiently water tight. I was surprised to see how easy the return of the fluid and débris was rendered.

Up to this date, April the 21st, the instrument has been made of nickled metal by Collin, in Paris. But I hope to succeed in having it made of hard rubber which is not corroded by the bichloride of mercury solution, or any liquid. It has also to be made with the sigmoid flexure of Bozeman double catheter, which makes its introduction easier in some cases.

Some criticism of the double current sounds now in use may be proper. In the modification of Bozeman's double catheter, presented by Dr. Howard A. Kelley at the Obstetrical Society of Philadelphia, Pa., March the 1st 1888, the screws, nuts, etc., are not easy to cleanse. Any tube, especially a small one, is not easily kept clean. I know this instrument only by the figure given in the *Am. Jour. Obstetrics*. The internal tube of the Fritsch, which I found used at the Maternité, does not admit the brush. Besides, the openings, or the eyes being on the sides, the fluid flows out laterally, not coming in proper contact with the fundus uteri. In Budin's "horse-shoe" tube the exit of the fluid is well provided for, the injecting tube being semi-lunar, which makes disinfection, however, next to impossible, except by passing the instrument through the flame, rendering it necessary for it to be made of metal.

Doléris' dilating sound is perfect for what concerns the irrigation; the egress of the fluid is effected between the two tubes, which are separable like the tongs used for wood fire. But to clean such an instrument, and make it aseptic (except with the flame) is an impossibility. See Fig. 1., especially the shape of the tube ɑD, two capital D's opposed to each other. No brush could follow the curves and penetrate the angles or curves of the tubes. Moreover, the blind end of the tubes from the openings down to the distal end is a pocket, in which the brush cannot penetrate, a very nice abode for microbes.

Pajot made two sounds; one (Fig. 2) is easy to clean, but, I believe, (having no actual experience of it) that it is difficult to make it work tight. The same inconvenience I met in my Erich. The second (Fig. 3) is too complicated to be possibly kept aseptic; all the time, hinges, screws, nuts, constantly get out of order, and are difficult to keep really clean. It cannot be made of hard rubber, consequently it cannot be kept in a mercurial solution.

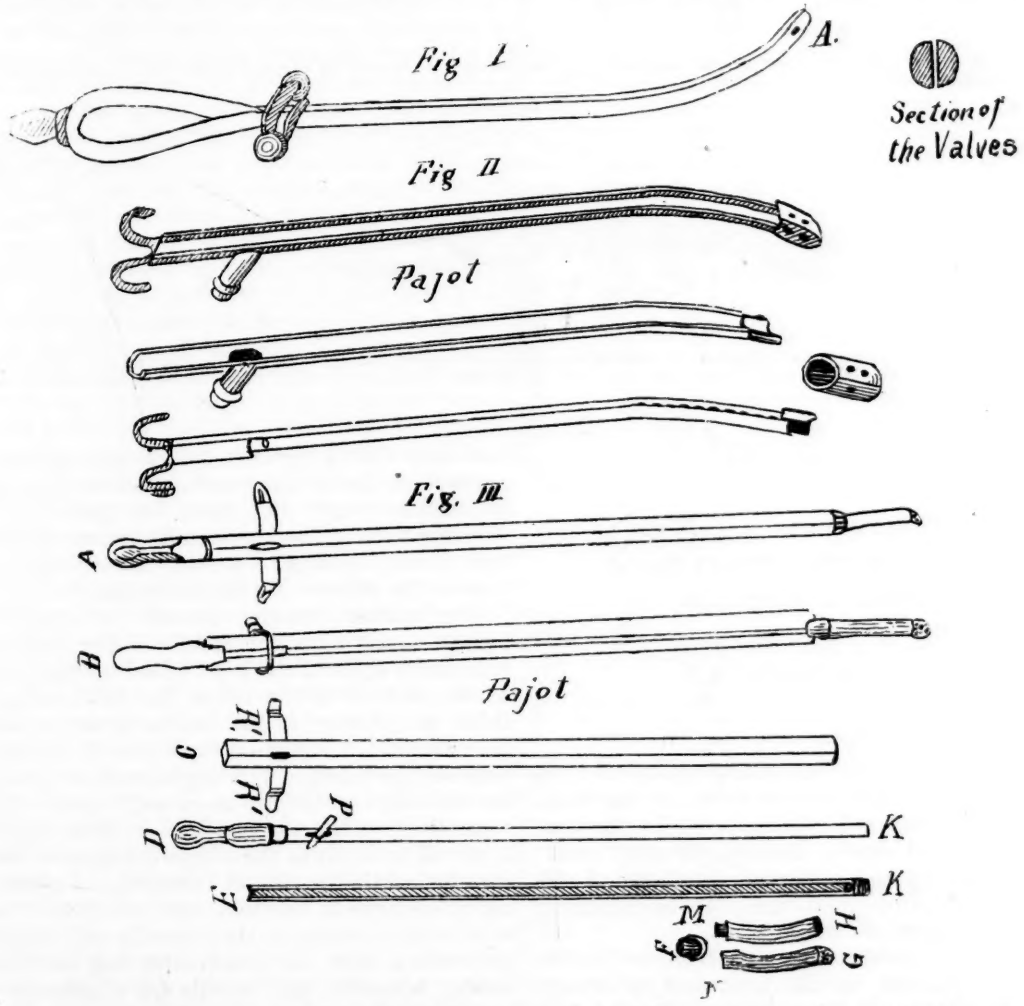
Dr. A. Reverdier, of Geneva, contrived another instrument (Fig. 4) not unlike a pair of scissors. One blade is an open channel, or large groove, for the return of the fluid or débris. The other blade is a tube perforated at the distal end, with holes for the projection of the fluid into the womb. At the proximal end of the tube is fastened a lateral tube for the India rubber tubing or the canula of the syringe. One great improvement would be to have this lateral tube in the axis of the tube, not in the side, so as to make possible the use of the brush inwardly. Another improvement would be to make the distal end movable for the ramrod (or brush) to go all along the tube. Every cul-de-sac is almost impossible to keep clean. This improvement exists in A. Oliver's sound.

A. Oliver's tube is a hollow catheter, where the walls are impressed with four grooves for the

return of the fluid injected. As the diagram shows, the tube presents four angles open internally, which, notwithstanding the use of the brush, may keep some little débris. It is made of hard rubber, and possesses the sigmoid [S] shape of Bozeman's catheter. The distal end is screwed on the instrument, and is movable, thus facilitating the cleaning. But the screws are not easily kept perfectly clean and aseptic. . . . I would suggest the suppression of the stop cock, a favorite place for microbes. The eyelets also may keep some bits of tissue.

My instrument has no rigid tube, no screw, no nuts, no blind end, (or cul-de-sac), no angle, no corners, where the microbes could hide, defeating the brush, and no eyelets. Being open at the distal end, it throws the fluid on the fundus uteri whence it comes down, and returns by the exit channel. I suppose, as is customary with us, the patient lies on her back. It might be made of glass, but I prefer hard rubber as being slightly flexible, and not so easily broken. Then to "give Cæsar what belongs to Cæsar," I am bound to say the idea of two grooves (there could be four, as in Oliver's sound, one for ingress of the fluid, three for the egress, but I prefer two only as being larger, *ceteris paribus*) came to my mind in looking at a "horse-shoe" catheter, originated by my friend Budin of Paris.

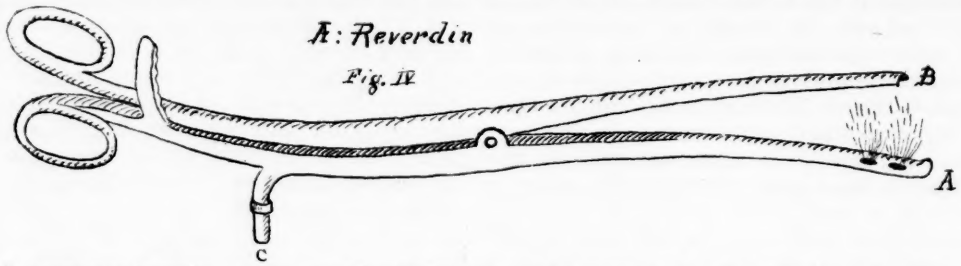
Now a little criticism of my own contrivance. The rubber sheath—which is made to go a little beyond the proximal end of the sound, for admitting the nozzle of the syringe—is the weak point of it. Soft rubber does not wear well. But being very cheap, (12 inches of rubber tubing is not very dear), it can be, if it seems advisable, changed every day, or one can let it stand in a strong solution of an antiseptic fluid, of course, after having taken the hard rubber part out of the soft rubber covering. I would not rely on a



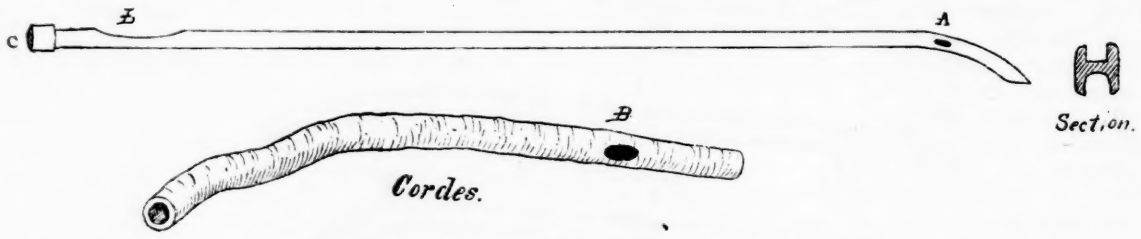
A, instrument ready for use. B, open for dilatation. C, dilator of cervix; two valves united by a double hinge. E, one of the valves. D, internal valve (injector). F, nut, screwing on K on one side, and on M and N on the other side. F is furrowed longitudinally. G H, two grooves held in contact by F. The extremity G is perforated with holes. P turned perpendicularly keeps the valves distended. R' R', levers for separating the valves, kept joined by a spring.

cleaning with the brush, the sound being still in the tube. I will try to improve that. If one says the grooves (being closed channels when the rubber covers them) will get blocked by débris, I will answer, the smaller the débris the more dangerous it is; if it gets in the sound it will be extracted, and I would not be afraid of a slight distension of the uterus which washes it better. Budin's experiments proved that, when the liquid distends the uterus slightly, the washing is more thoroughly made, and will promote contraction in it. Contraction closes the absorbing vessels, keeps the door shut to the infection, and detaches adherent bits of placenta. The whole instrument must be taken out and cleaned by forcing water from one of the ends, which are all open, and in which the nozzle of the syringe can be inserted.

The rubber covering can be as thin as one may wish, and I never experienced any difficulty in passing the sound, properly smeared with vaseline, glycerine, etc., in a uterus admitting a catheter of the same size. My sound slips into the uterus as easily as one of any other material.



B, groove open inwardly. A, tube, water flowing from the eyelets; observe the duration of the flow. C, piece for rubber tubing or syringe.



b, exit of the liquid after irrigation. B, hole in the rubber tube corresponding to b when the instrument is ready for introduction. The eye A may be covered or uncovered by the tube at will. The rubber tube goes up to C, for admitting the syringe.

THE CLINIC.

THE TREATMENT OF FRACTURES BY MEANS OF THE PLASTER OF PARIS DRESSING.

A Clinical Lecture delivered to the Third Year Class at the Medico-Chirurgical College, Philadelphia.

BY D. BENJAMIN, M.D.,

LECTURER ON FRACTURES AND DISLOCATIONS; SURGEON TO COOPER HOSPITAL, ETC.

[Reported for THE JOURNAL.]

Gentlemen:—I have been using plaster of Paris extensively for some twelve years, in the treatment of fractures, and it is undoubtedly the best, as well as the cheapest, dressing for most cases; notwithstanding the apparent simplicity of this dressing, it requires great care in its management in order to secure success.

I have found no dressing so satisfactory as the plaster, or silicate, for the treatment of broken bones in infants. I have recently treated two cases of broken femurs in very young children, aged respectively three weeks and eight months, and after trying various splints and apparatus, resorted to the plaster bandage, which gave great satisfaction; and as I have not known of this dressing having been especially recommended in very young children, I would call especial attention to the efficacy of this treatment.

The plaster bandage should be applied in broken femur from the middle of the foot to the hip, and a spica of the hip carried as high as the navel; care should be taken that the bandage be thick and strong at the bridge which connects the parts which surround the hip with that which encloses the thigh. The leg should be flexed at the knee and at the hip to an angle of about 40° respectively while the bandage is being applied. It is well to continue the ether for fifteen or twenty minutes, while the plaster is setting. I generally use chloroform in children, and the child should be allowed to sleep, as they usually will, without awakening after the chloroform has been withdrawn, naturally and quietly for a considerable time after the influence of the anæsthetic has passed off. The child should lie on its back, with its leg lying on a small pillow. The child will

be comfortable; you will have no more trouble with it; and when you remove the dressing, in seven weeks, the case is well; much better than the long splints that you see depicted in some of the books. The principal difficulties met with in the use of the plaster dressing are: *First*, to get good fresh calcined plaster; *Second*, keeping the rolls in stock without deteriorating; *Third*, preventing the plaster setting to a deformity, should the bones, as they are sometimes prone to do, become displaced while the plaster is getting hard; *Fourth*, getting the bandage off when the fracture is well, or for examination; *Fifth*, the limb getting rapidly too small for the cast; *Sixth*, the time and trouble to get the plaster properly spread on the crinoline and rolled.

I shall now attempt to describe how these difficulties may be best overcome, and will also describe and show you an apparatus which I have devised for the easy preparation of plaster of Paris bandages, as well as the ordinary rolls.

1. The difficulty in getting good calcined plaster is caused principally by the fact that it rapidly absorbs moisture from the atmosphere unless it be very carefully kept excluded from the air. It is best, before buying, to test the sample; good calcined plaster has a smooth, fine feeling when rubbed between the fingers; after it has become partially hydrated by exposure it will be lumpy and feel coarse. A little should be mixed with water and tested as to its setting qualities. Having procured a good article it may be kept for years without deterioration, in air-tight jars. About the best jars for this purpose are large specimen jars, with ground-glass covers.

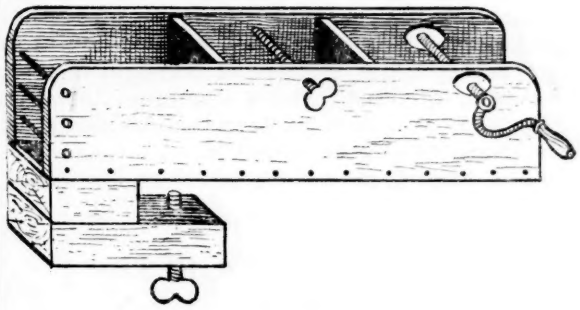
2. Rolls may be kept in stock by keeping them immersed in the jar with the fresh plaster.

3. To prevent the plaster dressing from setting to a deformity when the bones have a tendency to be displaced, a compress may be placed under the flannel bandage, or a piece of binder's board or felt placed over the flannel bandage.

4. By placing a strip of sheet lead an inch and a quarter wide under the plaster bandage, and cutting down upon it before the plaster is quite hard, and then withdrawing the piece of lead by pulling on the end of it, will make it quite easy to spread open and remove the dressing at any time after it has hardened; but it is difficult to cut down through a plaster bandage without causing some disturbance of the relation of the bandage to the limb, or of the bones to each other, and I usually prefer to get along without the use of the lead, and take the more tedious method of cutting through the hardened plaster at the proper time.

5. Cutting through the plaster may be facilitated by applying nitric or hydrochloric acid along the line of the intended incision; but unless neutralized by ammonia it will attack the edge of your steel cutting instruments. To prevent the limb getting rapidly too small for the cast, the plaster of Paris bandages used as splints for broken bones, as a general rule, should not be applied until after the swelling, œdema or effusions, bruisings or enlargements, have to a great extent disappeared, say from a week to ten days after the injury has been received, depending, of course, to some extent upon the amount of the swelling and the rapidity of its disappearance. Previously to the applying of the plaster of Paris dressing, temporary dressings and splints should be applied and proper antiphlogistic treatment instituted to reduce the primary inflammation. At any time after the plaster of Paris has been applied, should the limb—as it often will by atrophy—become too small for the cast, a piece should be cut out of the cast from a half inch to an inch wide through its entire length, and bandages and straps applied around the plaster cast sufficiently tight to draw it up to the limb.

6. To overcome the trouble and time which it takes usually to get the plaster properly rubbed into the crinoline, and rolled by hand, I have devised the instrument which I now show you, and will explain to you the proper method of its use. Any instrument maker, or any student with sufficient mechanical ability or dexterity to be a successful surgeon, can make one.



This machine does not cost more than any ordinary bandage roller, and will roll all ordinary bandages with the greatest ease and facility, and moreover is so constructed as not to be liable to break or get out of order. When you roll a plaster of Paris bandage you give the screw in the side one or two turns back sufficiently to loosen the partition. Having your crinoline bandages cut the proper width, you pass one end under the partition next to the crank, then fill the middle box full of plaster of Paris both under and above the crinoline, first having pressed the partition down to the crinoline tightly, then raising it about the sixteenth of an inch. By the heighth of this partition you regulate the thickness of the plaster on the crinoline. Catch the end of the bandage on the shaft and turn the crank backwards. As the crinoline winds, the plaster is carried along sufficiently thick and sufficiently rubbed in to make an excellent plaster bandage

roller. The roller may be wound tightly by pulling on the distant end of the bandage, or it may be wound loosely by allowing it to flow easily through the plaster. They should not be wound tightly, as it takes too long to soak them afterward, at the time of their application; neither should the plaster of Paris roller bandage be longer than four or five yards, as it would make them too bulky.

You can readily see that the plaster of Paris roller bandages can be made as rapidly, as pleasantly, as cleanly, and as efficiently on this machine as a plain roller bandage.

Having determined to apply a plaster of Paris dressing, you first bathe the limb with alcohol or whisky, rub it with a dry towel, then apply smoothly a flannel bandage first. While doing so have your plaster of Paris rollers steeping, end upwards, in warm water sufficiently deep to cover them, and containing a tablespoonful of table salt to a pint of water. Having squeezed out the surplus water after the entire plaster roller has been permeated, and having carefully ascertained that the broken bones are in their proper position, you apply smoothly and rapidly, occasionally rubbing.

The greatest advantage of the plaster of Paris dressing is that you can get your patient with a broken leg out of bed and out of doors, a very great advantage, one which is of the utmost importance to business men, as it enables them to get to their office, or have an oversight of their business, at least, which sometimes is worth thousands of dollars to them, besides the great improvement of general health.

The dressing can usually be left on six weeks.

MEDICAL PROGRESS.

SALICYLIC ACID IN DIPHTHERIA.—M. D'ESPINE, of Geneva, agrees with Roux and Yersin, of Pasteur's laboratory, regarding the specific character of the bacillus discovered by Loeffler. He believes that the bacillus does not enter the circulation and that it only produces intoxication of the organism by the formation of products which are afterwards absorbed. D'Espine has studied the destructive action of the various parasiticide remedies used in diphtheria as affecting the microörganism. Benzoate of sodium (5 or 10 parts in 100), chlorate of potassium (5 parts in 100), boric acid (4 parts in 100), —— of sulphur (sulphuret of sodium) (from 2½ to 5 parts per 100) left in contact with the bacillus for five minutes has failed to arrest its development. Under similar conditions it has been arrested however, by sublimate (1–8000), by phenic acid (2–100), by salicylic acid (1–2000), by chloral (1–100), by permanganate of potassium (1–2000), etc. These results have induced the reporter to employ salicylic acid in the local treatment of diphtheria, for the reason that it is distinguished among the other remedies experimented upon by reason of its feeble toxic properties. The plan which has given the best results in the hands of the reporter consists in irrigations repeated every hour or two through the mouth or nasal fossæ with a solution of salicylic acid of the strength of 1½ to 2 parts per thousand, which in the case of very young children may be reduced to 1–100 or 1–500. These irrigations may be given by the mouth with an irrigator and by the nose; in the latter case one or two tablespoonfuls of the solution are poured into each nostril after Rigauer's method. One or two litres of the solution may be used during the first twenty-four hours. In older children gargling may take the place of irrigation. When the false membranes are extensive and especially when they are thick, it becomes necessary to apply the solution also with a brush, with a view to softening and breaking them up. For this purpose the author also employs lemon juice, which in his experience has shown a decidedly destructive influence upon the bacillus of Loeffler.—*Gaz. Méd. de L'Algerie.*

CHANGES IN THE CHARACTER OF NASAL MYXOMATA.—At the recent meeting of the International Laryngological Congress, in Paris, M. SCHIFFERS called attention to the transformation of benign into malignant tumors. Such a transformation was long considered doubtful and it is still so in the case of myxomata of the nasal fossæ, properly so called. M. Schiffers presented a series of microscopical preparations obtained from tumors affecting two individuals where the transformation of the myxomata is clearly evident. In one the tumor had become epitheliomatous, in the other it was rather a neoplasm of intermediate nature. One should be on his guard against the possibility of such a transformation when a unilateral nasal obstruction, due to a neoplasm, is obstructed in a subject over fifty years of age. The indication is to operate as soon and as completely as possible with the scalpel or the galvanic knife, and follow the operation with strong antiseptic irrigations to prevent possible autoinfection.—*Le Bulletin Médical.*

ELECTRICITY IN THE TREATMENT OF INTESTINAL OCCLUSION.—HÉRARD reports twenty-four cases of intestinal occlusion treated by electricity. The method consists in first administering a salt solution and then passing a current of electricity. Faradic or galvanic Faradism is indicated in cases of sudden occurrence, galvanism in the cases of slower development. Hérard concludes from his experience that electrical treatment in such cases should always be tried before resorting to laparotomy.—*La Province Méd.*

TREPHINING THE ILIUM.—M. TERRILLON, in *La Semaine Médical*, says that trephining the ilium has long been practiced, Ollier, among others, having advised its employment in a number of cases. The first patient upon whom I performed the operation was a girl of 18, who consulted me on account of a fistula opening near the left anterior superior iliac crest and connecting with a large abscess of the iliac fossa. All methods of treatment hitherto employed had failed. There was an abundant discharge, and the general condition of the patient was bad. An extensive incision above the crest of the ilium enabled me to reach a great cavity situated between the iliac fossa and the thickened peritoneum. The cavity extended as far as the upper part of the true pelvis, and the finger could with difficulty reach its limits. Its walls were covered with thick, reddish fungosities; these were scraped off, and for greater safety a counter opening was made in front of the Fallopian arch. The aspect of affairs at first improved, but gradually the former conditions returned, except that the patient's general health was better than it had been. The difficulty seemed to be like that encountered in empyema,—to make a rigid osseous wall approach a movable one. The following operation was accordingly performed: An incision was made along the crest of the ilium as in the former operation, to enable the operator to explore the cavity and to serve as a guide; an incision 5 or 6 centimetres long was then made above the trochanter, the incision extending backward and going as deep as the bone; the lips of the wound were then turned back above and behind the cotyloid cavity and below the sciatic spine. The periosteum was then carefully removed and the ilium perforated below the superior strait, a finger introduced within the pelvic basin serving as a guide. The cavity was then cleansed and a large drainage tube introduced. Improvement took place rapidly, and the patient was completely cured in four or five months.

In 1888 I had occasion to perform a similar operation upon a man 22 years old, who presented all the symptoms of a psoas abscess with retraction of the thigh upon the pelvic basin. The case was one of several months' standing, and no method of treatment had been successful. An incision was made along the crest of the ilium, by the aid of which I found deep down a portion of denuded bone and a great collection of pus by the side of the psoas. An incision was made and the bone trephined behind the cotyloid cavity; adequate drainage was established and a rapid cure was obtained.

TREATMENT OF ACUTE BLENORRHŒA.—At the outset the abortive treatment with nitrate of silver should be employed. This should be injected by means of a syringe with a backward stream. Care should be taken to constrict the penis to prevent the fluid from being forced too far.

When the discharge is well established one of the following injections should be used:

1.	Lime water	50 grams.
	Distilled water	150 "
2.	Sublimate	3 centigr.
	Distilled water	150 grams.
3.	Salicylate of mercury	6 centigr.
	Bicarb. soda	1 gram.
	Distilled water	150 grams.
4.	Resorcin	3 grams.
	Distilled water	150 "
5.	Creoline	1.5 gram.
	Distilled water	150 "
6.	Pyridine (the most efficacious)	50 centigr.
	Distilled water	150 grams.

These injections should be repeated after each micturition and when possible every two hours. To render them most active they should be given hot (104°).

After the entire disappearance of pain and the subsidence of the discharge the balsamic preparations should be employed:

R.	Freshly powdered cubebs	80 grams.
	Copaiba	50 "
	Essence of peppermint	a few drops.

Dose. A mass as large as a small nutmeg, to be taken in a wafer before meals.

If a cure is not obtained in a fortnight the preparations should be varied, and with a view to render them as efficacious as possible a choice should be made of one of the following formulæ:

1.	Distilled water	150 grams.
	Subnitrate of bismuth	5–10 "
2.	Liquid vaseline	150 grams.
	Salicylate of bismuth	5–10 "
	Sulphate of quinia	1 "
	Gum	10 "
	Glycerine	30 "
	Rose water	120 "
3.	Liquid vaseline	150 grams.
	Salicylate of bismuth	5–10 "
	Resorcin	3 "
	Iodol	1 "

These last injections should be made night and morning.

The two following injections are also useful:

1.	Sulphate of zinc " " copper " " iron	20–50 centigr.
	Distilled water	150 grams.
2.	Citric acid	90 centigr.
	Salicylic acid	3 "
	Distilled water	150 grams.

Finally, in those cases where it becomes necessary to apply treatment to the bulbar and retrobulbar regions which afford a last refuge to the gonococcus, we may resort to various solutions, especially one of nitrate of silver in the proportion of 1 to 50.—L. JULLIEN, *Gaz. Méd. de Liége.*

TREATMENT OF DYSPEPSIA.—There are certain ptomaines which are formed in the stomach

as the result of the fermentation of foods. The therapeutical indication in such cases is to prevent such fermentation and to destroy the toxic substances formed. This may be accomplished by means of water charged with chloroform and antiseptics, and by the preparations of naphthol and salicylate of bismuth according to the formulæ of Bouchard:

℞. Naphthol B. . . . . 7.5 grams.
Bismuth salicylatis . . . . . 15 "
For 30 cachets. One cachet after each meal.

℞. Naphthol B. . . . . .
Bismuthi salicylatis. . . . . .
Magnesiæ. . . . . āā 5 grams.
For 20 cachets. One cachet at the commencement of each meal.

℞. Bismuthi salicylatis. . . . . .
Magnesiæ salicylatis . . . . . .
Sodii benzoatis. . . . . āā 5 grams.
For 20 cachets. One cachet at the commencement of each meal.

—*Rev. Gér de Thér.*

TREATMENT OF DISPLACEMENTS AND DEVIATIONS OF THE UTERUS BY ALEXANDER'S OPERATION.—PROF. SCHWARTZ, of Paris, reports in detail ten cases of uterine displacement treated by Alexander's operation. The results upon the whole were very satisfactory, and the reporter concludes that the operation is useful in all cases of deviation of the uterus which are reducible or reduced and easy to maintain; also in cases of simple prolapse of the first degree, provided the uterus is easily replaced; it is well in these latter cases to combine also an operation which will narrow the vagina and vulva, especially where laceration has taken place. To obtain good results it is not only necessary that the conditions above mentioned shall be fulfilled, but also that the uterus be not too greatly increased in volume and weight. The Alexander operation is entirely devoid of danger, a fact which especially recommends it in all cases where it is indicated.

When, on the other hand, there is retroversion with adhesion and there is difficulty in the restoring and maintaining the uterus in its proper position, and when, too, there are signs present which indicate disease of the pelvis or the uterine appendages, laparotomy with ventrofixation will be indicated. The same procedure will be indicated in cases of a return of the prolapse after operations on the uterus, vagina, vulva and perineum, such as is observed in cases of hypertrophy with intractable augmentation of volume and weight on the part of the uterus.—*Rev. de Chir.*

A NEW METHOD OF ADMINISTERING COD LIVER OIL.—GUBB, of London, is authority for the statement that the disagreeable taste of cod liver oil may be made to disappear entirely by mixing the oil with extract of malt which has been prepared *in vacuo*. Attention is directed in this connection to a remarkable phenomenon: the aqueous extract of malt placed in contact with cod liver oil dissolves it. This solution is perfectly clear and transparent and shows no fat globules under the microscope. In this manner, strange as it may seem, a true solution is produced. To displace the oil it is only necessary to place a drop of water on the surface, when immediately small drops of oil appear. In this manner the oil which was in solution becomes an emulsion, but this emulsion is more perfect than that of butter in milk. Only extracts of malt which are rich in diastase possess this property. Invalids and especially children enjoy the emulsion, and far from disturbing digestion as the raw oil too often does, the malt improves it.—*L'Union Médicale.*

PYÆMIA AFTER ABORTION.—The etiology of puerperal fever, says V. BABES (*Cent. für Chir.*), has been studied by many authors; the pyogenic streptococci are the ones most frequently found, while now and then a few saprositic bacilli are met with. Babes had opportunity to examine two women who died of pyæmia following abortion, and found in the multiple abscesses phlegmous and thrombi the staphylococcus pyogenes aureus. Supported by these observations he believes that there is an important difference between puerperal infection when the streptococcus are found and infection after abortion when staphylococci are present. The reporter's experience shows that streptococcus infection may occur even in abortion.

ARSENICAL TREATMENT OF LYMPHADENOMA.—An interesting therapeutical question, the treatment of lymphadenoma by means of arsenic, has recently been discussed in the Société de Chirurgie of Paris. In addition to the internal treatment with large doses of arsenic, some prefer to add the interstitial injection of a solution of the drug. The results vary according to the nature of the tumor, the diagnosis of which is not always easy; in the case of benign lymphadenoma they are excellent, but in malignant cases and in tubercular neoplasia they are *nil*. The internal treatment with arsenic, even in doubtful cases, is readily admitted by the majority of surgeons. The interstitial injections in the depth of the tumors excites suppuration, and many prefer the extirpation of the tumors.—*Gaz. Méd. de Paris.*

SOURCES OF INFECTION IN MENINGITIS.—Five forms of bacilli capable of producing meningitis have thus far been identified, viz.: 1. staphylococcus aureus; 2. streptococcus pyogenes; 3. bacillus meningitidis of Neumann and Scheffer; 4. pneumococcus Fränkelii; 5. bacillus meningitidus intracellularis of Weichselbaum and Goldschmidt.—*Correspondenz-Blatt f. Sch. Aerzte.*

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SATURDAY, JANUARY 11, 1890.

THE MICROBE.

The microscopic germ or microbe of to-day, or the old-time entity, has assumed an important rôle in our lives. Of late years a flood of light has been thrown on the subject of germs by the work of M. PASTEUR, his researches in ferments and fermentation, and his extraordinary findings in chicken cholera, charbon and hydrophobia. These have attracted the attention of the medical and lay world, and have been the means of leading to endless investigation in every clime.

To-day, thanks to such researches, upwards of two hundred germs, microbes or bacteria are known, the majority wholly harmless as disease-producers—in a word, most useful in the many physiological processes taking place within our bodies.

While trying to establish the *raison d'etre* of some of these microbes a new one is announced that temporarily promises to be king. The new *bête noire* is influenza, doubtless due to a specific organism wafted through the atmosphere to our circulation. In common with other microbes, "like produces like." This influenza bacillus is an old-time globe trotter. Its antiquity makes it intensely respectable and correspondingly annoying. He hails from the land of the unknown—the East. The Russians attribute it to the Chinese. Certain it is, from St. Petersburg it has spread all over Europe and, instead of continuing a harmless course, seems to have taken on virulence in its travels and now is said to be death-dealing. Doubtless thousands of eyes scientific are watching for the "little stranger."

The conclusion that "like produces like" is an unalterable law in disease and nature. What practitioner would expect a patient with small-pox to cause scarlet fever, or one with the latter to produce puerperal fever in another? What agriculturist planting corn would expect wheat? "Like produces like."

Does vaccine produce scarlet fever or measles? Or has it, through long decades, simply produced the usual effects of vaccination, in all ages and climes? Here a new thought intrudes itself. The result of a successful vaccination is a scab or crust, a scar, and subsequent immunity from small-pox. How many of our readers have paused and attempted to reason out the exact *modus operandi* of vaccine within the system? What does it do in the body? Does the scientist live who in a few happy, well-chosen words can explain that action, or is our reasoning anent it empirical as it is on other equally important questions in disease? What does the cow-pox or humanized vaccine do in our life currents—they that alike distribute nourishment and disease to our tissues, and eliminate effete products? That a successful vaccination exerts a specific influence on the blood, we accept. Do the entities in the vaccinal fluid set up a fermentation within, as evidenced by the often great systemic disturbance, flushed face, rapid pulse and high temperature? Then follows a gradual subsidence of the disturbance, and the irritative effects of the poison pass away. The septicæmia, or whatever you may be pleased to call it, is over, and protection against small-pox becomes an accepted fact. We know that for long years the serum of the vaccine vesicle was not supposed to be particulate; but, thanks to the investigations of DR. LIONEL BEALE, MR. GODLEE and others in England, we now know that it is particulate and full of moving entities. Further, that if vaccine serum be filtered, the fluid that passes through the filter, if used on new-born children, produces no effect, but that if the filtrate be used, the usual characteristic effects follow.

The vast field of bacteriology at present offers some of the grandest problems to faithful workers. Patient investigators should be accorded the largest measure of patience and fair play. The truly vital problems will only reveal themselves to the faithful workers. On our part it must be patience and charity in their crucial and incessant research.

And apropos of inoculations, the press of the country has again referred to the inoculations practiced at Rio de Janeiro, stating that the City Council of that city has been so favorably impressed by their ascertained value as protecting against yellow fever, that $600 a month has been voted for vaccinal establishments. To us, at a distance, it seems that the reasoning of DR. DOMINGOS FREIRE, of Rio de Janeiro, Brazil; DR. L. GIRERD, late of Panama, and DRS. CARLOS FINDLAY and DELGADO, of Havana, is sound and based on the reasoning applied to vaccination. From a case of specific yellow fever blood is taken from the finger and a culture is made. The attenuated culture is used for inoculating. Natural result, a mild yellow fever, or planting corn that they may get corn, to use a homely simile. Dr. L. Girerd, while in that hot-bed of yellow fever, Panama, inoculated himself and produced a mild yellow fever. In December, 1886, the *Canada Medical Record* published a translation of his paper. In Havana, Cuba, Dr. Carlos Findlay repeatedly has inoculated new arrivals, with the happiest results, *i. e.*, subsequent immunity in that hot-bed of yellow fever. Again "like produces like." That the blood of a patient suffering from specific yellow fever must be full of its poison goes without saying. In attenuating it, by cultures made *a la* Pasteur, the gentlemen named have worked on accepted lines. They are well-known writers and investigators, as native and foreign medical literature testifies. They have fixed on certain germs or microbes which, from their constancy in their cultures, they believe to be the specific germ. Many years ago, during a limited epidemic of yellow fever at Southampton, England, DR. HASSELL, of that city, detected an unknown germ or entity in the blood of his patients. ZIEMSSEN refers to it. But be that as it may, from the blood of yellow fever patients the poison of the disease is obtained.

To repeat, time, patience and investigation will clear up the minor details; the great ones seem to be indisputable. That yellow fever is due to an entity or germ all students of yellow fever accept. The year 1890 should show great strides in bacteriology and preventive medicine, and the unfolding of many of nature's secrets. Let scientists work, resting assured that time will do justice to all, and that medical science will place her laurels where they belong.

THE EPIDEMIC.

This disease, so sudden in its appearance, so uniform in its symptomatology, and so early pandemic, is commanding universal attention, and will enlist a critical study on the part of the medical profession at large. In the rapidity of its development and world-wide diffusion as compared with other epidemics, its progress is simply phenomenal. So far as we know it is uninfluenced by temperatures, climates, or seasons. It is regardless of geographical limits, and obeys no known laws of transmission.

With reference to its etiology, we have as yet no positive knowledge; rather, we have everything yet to learn. Bacteriological studies have all had their birth since a like epidemic was known, and until now no such opportunities for study were possible. If its methods of propagation are specific they are essentially different from any others, of contagions or of epidemics, with which we are familiar. It would seem most natural to ascribe such world-wide diffusion of the disease to telluric or atmospheric influences. We are at a loss to account for such rapid diffusion in any other way. It would seem, from the great similarity of the cases reported, that a common cause must be responsible for such effects.

It deeply concerns us to know what light, if any, a carefully conducted series of bacteriological studies may be able to throw upon this field, in which at present darkness seems absolute. Happily, the epidemic does not assume the severity of a pestilence, and thus the people will be saved from panic. Its general prevalence in the United States must be conceded, not in the severer form in which it has prevailed in Europe, but it is equally universal, and has its characteristics equally well defined. In some instances the persons affected suffer severely, in others a slight indisposition only ensues. It differs in some respects from former epidemics of its kind. As a rule, the catarrhal symptoms are notably less severe, so much so as in a large number of cases to be nearly or entirely wanting. The nervous symptoms are much more pronounced. Frequently excruciating pains referred to the head, spine, and lower extremities, constitute the essential features of the disease. In the absence of severe bronchial or pulmonary complications the fatality is much less than that which prevailed during former epidemics of the same disease. As

we might anticipate, patients are prone to suffer severely from nervous exhaustion, but, so far as our observation extends, we fail to note any dangerous or even serious nervous complications.

The remedies that seem best to meet the requirement in this affection are anodynes, antipyretics and tonics. Antipyrin and bromides have proved beneficial, and quinine in tonic doses has appeared to be of special service.

The disease runs its course in a brief period, usually varying from two to four days. In many instances the indisposition hardly confines the patient to his room. In others, the suffering for one or two days is very severe, and decided treatment is indicated. During convalescence patients suffer most from a sense of weakness, and in many instances this sense of prostration is continued for a number of days. It is important that all the essential facts connected with this epidemic be carefully observed, collated and published. If bacteriologists can add to our knowledge as to its pathology, their contributions will be everywhere welcomed.

EDITORIAL NOTES.

HOME.

DR. LEWIS H. SAYRE, a son of Dr. Lewis A. Sayre, the well-known surgeon, was found dead on a sofa in the reception parlor of his father's home, at 285 Fifth Ave., New York, on the 3d inst. He had been working very hard at his professional labors recently, and he went home worn out, and threw himself on the sofa and fell asleep. A servant was the first to discover his death. He had been troubled with heart weakness for some time, and his sudden death was attributed to heart failure. He was 38 years old, and had a lucrative practice. Some years ago he married Miss Alice Pomeroy, the daughter of a wealthy dry goods merchant of New York. His widow and three children survive him. Dr. Sayre was graduated from Bellevue Hospital Medical College in 1876. He was a member of the New York County Medical Society, the American Medical Association, the Pathological Society and the Neurological Society.

DEATH OF DR. WALTER K. BOYLAN.—The cable announced last week the death, in Berlin, Germany, of Dr. Walter K. Boylan, of Cincinnati, on December 26, last. Dr. Boylan was a young physician of promise and prominence in the profession of his city. Graduating from the Medical College of Ohio in 1883, he was at once elected Professor of Materia Medica in the Cincinnati College of Medicine and Surgery, a position which he held until the election of a new faculty a few years later. At the time of his death he was pursuing studies in Europe.

ANOTHER MEDICAL LIBRARY PROJECT.—A nucleus for another medical library and *rendezvous* in New York has just been brought into possibility by the junction of the Mott Memorial Library and the State Medical Association. They have 5,000 volumes and 8,000 respectively and most eligible headquarters at 64 Madison Avenue. They have a small fund each, and the opportunities for a steady increase in a membership of 700 physicians in the State Association. Many a useful institution has had its beginnings in a more meagre foundation than is presented by the above combination.

THE HOSPITAL SUNDAY FUND IN NEW YORK CITY.—The present indications are that large contributions have been made to the annual Hospital Fund. The amount obtained in 1888 was $52,139, an amount which will be equalled, at least, this season. The collection in one church amounted to a little over $8,000.

THE SOUTHERN CALIFORNIA MEDICAL SOCIETY will hold its fifth semi-annual meeting at Santa Barbara in June.

THE OHIO BOARD OF PHARMACY will hold meetings for the examination of persons desiring to register during 1890, as follows: Cincinnati, Monday, Jan. 13; Columbus, Tuesday, March 25 and Monday, May 12; Toledo, Tuesday, July 22; and Cleveland, Monday, Oct. 13.

NEW YORK ACADEMY OF MEDICINE.—Mrs. Eliza C. Farnham has given $10,000 to the library fund in memory of her deceased husband, Dr. Horace P. Farnham.

A COURAGEOUS AMBULANCE SURGEON.—*The Medical News* says that Ambulance Surgeon Mead, of St. Mary's Hospital, Brooklyn, was called to an elevated road accident, and found that the mangled, yet conscious patient had fallen and been caught under a locomotive. The surgeon administered a hypodermic to the injured

man before the latter had been disentangled from the track, and while the two, surgeon and patient, were lying beneath the fire-box of the engine.

THE KANSAS MEDICAL CATALOGUE is the title of a new medical journal published at Fort Scott, Kan., and edited by Drs. F. F. Dickman, J. B. Carver and J. M. Poindexter.

THE STATE MEDICAL SOCIETY OF KANSAS will hold its next annual meeting at Salina, on Tuesday, May 13.

THE FIRST DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK will hold its twenty-first anniversary meeting in New York City on the 14th, 15th and 16th inst.

DR. JOHN S. MARSHALL, of Chicago, has been appointed Secretary of the National Association of Dental Faculties. The late Secretary, Dr. Junius E. Cravens, resigned in consequence of having taken up his residence in Paris, France.

THE POLYCLINIC MEDICAL SOCIETY gives, under its auspices, a lecture, or holds a meeting of its Therapeutical Section, every Tuesday evening at 8 o'clock, at the College Building, N. W. corner of Broad and Lombard streets, Philadelphia, during the season. The whole course is free to members of the profession and to medical students. The following lectures and meetings are announced for 1890:

January 7, Dr. Alexander MacCoy, "The Clinical Features of Tuberculosis of the Larynx."

January 14, Dr. B. F. Baer, "Abdominal Surgery."

January 21, Dr. Thomas G. Morton, "Modern Treatment of Club-foot."

January 28, Meeting of the Therapeutical Section.

February 4, Dr. Edward P. Davis, "Use of the Obstetric Forceps."

February 11, Dr. John B. Roberts, "The Anatomy of Facial Expression."

February 18, Dr. J. Henry C. Simes, "Prostatorrhœa."

February 25, Meeting of the Therapeutical Section.

March 4, Dr. R. W. Seiss, "Inflammation of the Eustachian Tube."

FOREIGN.

CHOLERA AND ITS PILGRIMAGES.—*The Indian Medical Gazette* says that some months after the outbreak of cholera at the Pearl Fisheries of Ceylon, there has been a fresh outbreak of cholera on the island, brought about by a Roman Catholic pilgrimage to St. Annas, at Palleecudava. This pilgrimage seems to have been attended by people from all parts of the island, including the Northern Province and Southern India, where cholera was known to be present. The history of the ontbreak is similar to those which occur so frequently in India. Immediately the pilgrims reached St. Annas' deaths from cholera began. A panic ensued. The Roman Catholic Bishop broke up the festival; the crowd was dispersed and carried cholera with them wherever they went.

THE SECOND CONGRESS FOR TUBERCULOSIS will be held in Paris during the latter part of July. Prof. Villemin will act as President. The following questions are to be discussed: 1. The Identity of Human and Bovine Tuberculosis; also that of Other Animals; 2. The Bacteriological and Morbid Associations of Tuberculosis; 3. The Isolation of Tuberculous Subjects; 4. The Agents Capable of Destroying Koch's Tubercle Bacillus, With a View to the Prophylaxis and Therapeusis of the Disease in Man.

A HELPFUL ASSOCIATION IN VIENNA.—The *British Medical Journal*, December 21, 1889, states that the Governor of Lower Austria has sanctioned the formation of the American Medical Association of Vienna, whose object is the taking in hand of British and American medical men immediately on their arrival at the University. The Association, made up of physicians for the most part, arranges that each student shall have a committeeman, to look to for information, who is interested in the same line of study. The Rev. Francis Gordon has been chosen to act as Secretary and Treasurer of the Association and may be addressed at 12, Landesgerichts strasse. The entrance fee is one gulden, and membership may be enjoyed by any English-speaking physician or medical student. The Association will be helpful in showing to strangers how they can avoid extortionate charges and otherwise economize. According to its estimates an economical student can live on $30 to $40 per month. In addition to the lectures regularly scheduled in the *Calendar*, by the professors, there are the lectures by the assistants, new courses of which are being developed all the year round, new talent being discovered and forced to the front every session.

TOPICS OF THE WEEK.

THE APPROACHING REVISION OF THE PHARMACOPŒIA.

"Eile mit weile."

Progress in pharmacy is progress in medicine, and all physicians should be inspired by a desire to improve, in every possible way, the Pharmacopœia, which represents the accumulated experience of ages in the science and art of pharmacy, and constitutes the most reliable guide to pharmacists and physicians who would acquaint themselves thoroughly with medicinal principles and their effectual combination in eligible pharmaceutical preparations. The value of any addition to the Pharmacopœia suggested by pharmacists should, therefore, receive the earnest consideration of physicians, and the medical profession should be able to furnish from their clinical experience many important and vital suggestions to the committee who are entrusted with the important duties of revision. This committee, indeed, invites criticism from all well-informed sources, and has widely distributed a Digest of Criticisms of the present Pharmacopœia for the purpose of the freest and fullest discussion by all concerned. It is in this spirit that the following criticisms are submitted.

As the generally accepted standard of strength and quality for medicinal preparations, the United States Pharmacopœia should be most carefully compiled and removed as far as possible from all mercenary influences. One interest which is liable to influence the publication of the next Pharmacopœa disadvantageously, unless such influence is properly controlled and judiciously acted upon, is the manufacturing pharmaceutical interest.

Owing to its wide-spread circulation, its general acceptance as a standard, the Pharmacopœia must exert a very powerful influence both with physicians and druggists in the direction of inducing a larger consumption of pharmaceutical preparations. Thus, houses who own copyrighted, trade-marked, or patented preparations would be willing to pay large sums to induce the Pharmacopœia to recognize the same. The adoption of a new standard of pharmaceutical preparations to substitute existing standards of the present day could be used to great and profitable advantage by the manufacturers if they controlled, by copyright, or trade-mark, or patent, the name of the line of pharmaceutical preparations, or the line itself. What a profitable thing for the originator, for instance, would be the recognition by the Pharmacopœia of the line of pharmaceutical preparations known as specific medicines, specific tinctures, or green root tinctures, as a substitute for the fluid extracts which have been so long in vogue. Shall antipyrin, antifebrin, sulphonal, chloralamid, and many other specialties of foreign manufacturers, who are flooding the country with remedies protected by patented processes or fancy trade-marked names, so as to secure to their possessors a permanent monopoly at any outrageous price they may wish to arbitrarily fix, be admitted to the Pharmacopœia? Are such remedies and their literature to usurp a place in scientific literature, to the disgrace of the legitimate interests of pharmacy, the aggrandizement of foreign capital, and the destruction of pharmaceutical nomenclature?

We do not wish to be misunderstood in this matter. We do not wish to reflect on the therapeutic utility of such preparations, but merely to make thoroughly apparent the caution and care necessary to consider the true character and tendencies of the many products advanced for Pharmacopœial endorsement.

It is not necessary to amplify on these points. The tendencies of these defilers of the Pharmacopœial temple are too well known to ever receive the recognition they covet.

There are, indeed, many actual and much needed improvements required in this temple of pharmacy, if we may continue our simile, which have none of the disadvantages, to say the least, of this rapidly growing progeny of foreign invaders. Let the committee address their attention to these. To what standards of excellence do our average manufacturers of medicine live up to at the present time? Are these standards the highest and best known to pharmaceutical science? Not at all, and we shall take occasion, in further comments on this important subject, to mention some improvements in pharmaceutical processes, the claims of which are eminently more worthy of consideration by the Committee of Revision. It will be readily seen that manufacturers of pharmaceutical preparations generally could well afford to bring to bear great influence upon the projectors and controllers of the Pharmacopœia, if they had the slightest hope of inducing the committee to act upon their suggestions.

It is, therefore, essential that the committee in charge of the Pharmacopœia should be actuated solely by a regard for scientific and humanitarian interests. They should be men not only honest in purpose, but they should also be sufficiently competent by experience to judge as to the merits of each individual presentation. They should be free from all bias and prejudice. *Eile mit weile.* To make haste slowly should be their guiding rule.—*Medical Age.*

EXECUTION BY ELECTRICITY IN NEW YORK.

The following is an extract from a decision in the Supreme Court of New York, rendered December 30, 1889, regarding the alleged unconstitutionality of the law providing for the electrical execution of criminals. The motion of the opponents to the new law is denied by this decision, which is written by Judge Dwight, and which denies the contention of those opponents that the law prescribes "a cruel and unusual punishment."

"It detracts nothing from the force of the evidence in favor of this conclusion that we do not know the nature of electricity nor how it is transmitted in currents, nor how it operates to destroy the life of animals and men exposed to its force. Neither do we know the nature of the attraction of gravitation, which is the operative force employed in the infliction of death by hanging, nor how that force operates to draw towards each other masses of matter freely moving in space. We know these and all other forces of nature by their effects, and we avail our-

selves of them in the daily processes and pursuits of life with a confidence based upon common experience, without inquiry as to the essence of the force or the mode of its operation.

"The experiments with electricity as a death-dealing agency disclosed by the evidence were necessarily confined to the lower animals, but unfortunately the experience of mankind in this respect has not been confined to experiments purposely made. Death by strokes of lightning has been known to the world in all ages, and the frequency and publicity of death by accidental contact with electric wires during the last few years, and especially the last few months, have made the deadly power of the electric current shockingly familiar wherever the newspaper is read.

"In most casualties of this sort, the exposure being wholly accidental, the contact is imperfect, the resistance unregulated and the force of the current accidentally deflected through the body of the subject, only a fraction of that being transmitted through the wires. Accordingly, in some cases the victim of the accident has escaped with his life, and in some cases death has been accompanied with burnings and contortions. But in all such cases the effects mentioned have evidently been due to lack of force in the current received or to the imperfect manner of its application to the body of the victim, and the general result of these demonstrations in the light of the scientific evidence in this case is, as we think, to remove every reasonable doubt that the passage of a current of electricity of a certain well-determined intensity through the vital parts of the human body under chosen conditions of contact and resistance must result in instant death.

"If the question here were of the wisdom and advisability of the proposed change in the mode of inflicting the death penalty the discussion might be prolonged. As we are confined to the question of the constitutionality of the statute which introduces the change, we deem further discussion unnecessary for the presentation of our views."

The question has now been passed upon by all the courts save one, the Court of Appeals, before whom it will be brought early in the current term.

A MUSEUM OF SOCIAL ECONOMY.

It is officially announced that the Cross of the Legion of Honor, with the grade of Chevalier, has been conferred on Mr. Ernest Hart, in recognition of his services to France, especially as President of the Social Science Committee in the recent International Exhibition. It is hoped that suitable recognition will also be made of the services of Dr. Louis Parkes, who acted as the very efficient Honorary Secretary in organizing this Section, which has proved so interesting that the French Government has determined to establish a permanent Museum of Social Economy, which of course includes hygiene, education, public sanitation, and other cognate subjects. M. Léon Say, the eminent President for France of the Section, has appealed to English exhibitors to allow as many of their exhibits as possible to remain in the permanent museum. It is hoped that a large proportion of the exhibitors will comply with this request, if not in form, in substance, by leaving their exhibits or by forwarding equivalent models and books.—*Brit. Med. Jour.*

PRACTICAL NOTES.

THE CARRIAGE OF INFECTION BY PHYSICIANS.

With reference to the communication of contagious diseases by physicians, a question that is now being agitated in England, a correspondent of the *British Medical Journal* writes that "although it cannot be denied that it is possible for a medical man under some circumstances to convey infection from one patient to another, the risk of this taking place is, if ordinary precaucautions be taken, almost *nil*. This is clearly shown by the experience at the London Fever Hospital, where the resident medical officer in the discharge of his duties is constantly passing from the scarlatina department to the departments for measles, typhoid, diphtheria, etc., and yet it has never been found that he transfers these contagia, although he would be much more likely to do so than an ordinary practitioner, inasmuch as the poison is necessarily more concentrated in a fever ward than in a room where only one patient is treated. The medical attendant is not, as a rule, brought into sufficiently close and prolonged connection with his patient for his clothes to receive any very large amount of the contagion, and a short exposure to the open air is generally sufficient to disinfect him. Nurses, no doubt, whose clothes from prolonged and constant contact with the patient become saturated with the poison, may readily convey infection. The only precautions taken by the physicians to the fever hospital—and a long experience has shown them to be quite sufficient—are to wear a special outer garment and cap in the wards, but even this is not done by the resident medical officer.

"For all ordinary purposes washing the hands in a disinfecting solution and a short exposure to the fresh air will, I am sure, sufficiently disinfect the practitioner, though it is advisable that he should change his coat, and he ought, as far as possible, visit his infectious cases last.

"In the case of smallpox, however, where the poison is present in a liquid form, and may possibly get smeared on the clothes, a change of clothes is necessary."—*Medical News.*

THE SIGNIFICANCE OF ERYTHEMA.

Erythema multiform is more and more growing in importance as a symptom or precursor of not a few grave diseases. It does not do for us now to regard an attack of it as simply due to indigestion. It has been shown that the occurrence of erythema may mark the beginning of typhoid fever, may occur as one of the symptoms of acute or chronic malarial disease, may be a manifestation of a rheumatic or lithæmic state, or may even, as it were, be an abortive manifestation of any of these diseases. Our attention is

again drawn to the fact by Dr. Moncorvo, of Rio de Janeiro, who, in a recent number of the *Revue mensuelle des maladies de l'Enfance*, reports two cases of erythema nodosum occurring in the course of acute malarial disease and yielding promptly to quinine.—*N. Y. Med. Journal.*

THE TREATMENT OF ACUTE CATARRH OF THE RECTUM.

Quite frequently the practitioner of medicine sees cases in which the entire list of remedies generally found of value in the treatment of diarrhœa have proved useless, or merely palliative in effect. While they may control the frequent movements of the bowels for a time, the trouble reasserts itself as soon as the medicine is withdrawn, at the best in a somewhat modified form. Careful inquiry will show, in such cases, several points of value as to diagnosis and treatment. The attack has probably been preceded by a few days during which there has been a sensation of weight and fulness in the rectum and about the anus; following this, a sensation of bearing down asserts itself, accompanied by violent pain referred to the region of the stomach, or small gut. So severe is the pain in its paroxysms that the patient may cry out with it and the perspiration break out over the body. At first small passages may occur, but after a few stools they consist of wind and a few drops of mucus, which is expelled after a period of agonizing pain and tenesmus. Opium makes the state ultimately far worse than before, and nearly all astringents are valueless. Under these circumstances small doses of chlorate of potash injected into the rectum are most serviceable, only one or two injections being necessary in some acute cases to produce a cure. A saturated solution of the potash in water should be employed and about half a tumblerful injected each time, very slowly and without force, and retained for ten or fifteen minutes. Large injections will cause pain and expulsion of the liquid, and no result will be attained.—*Medical News.*

SOMNAL, A NEW HYPNOTIC.

RADLAUER, of Berlin, has introduced a new combination to which he has given the name "somnal." This substance is composed of chloral, alcohol and urethane, and is said to be a true chemical compound, and not merely a mixture. It is, therefore, different from the "chloralurethane" which has been used, for a year or more, by alienists and nerve specialists, and which has been considered by some of them both safe and reliable. The *British Medical Journal* says that somnal occurs in clear, colorless crystals, having a slightly bitter taste and being readily soluble in water and in alcohol. It is given in doses of thirty grains, and sleep is produced in thirty minutes. The sleep is described as sound and natural, lasting from six to eight hours, and followed by no unpleasant effects. Somnal does not disturb the digestion, has no influence over the pulse or temperature, and, in fact, has the excellent qualities of both chloral and urethane without their disadvantages. Favorable experience with the drug is said to have been reported from the hospitals of Berlin and Moscow.—*N. Y. Med. Journal.*

PULMONARY HÆMOPTYSIS.

M. VIDAL recommends treating pulmonary hæmoptysis in phthisical patients with ipecacuanha and antimony, or kermes (oxydum stibii sulphuratum rubrum), in small doses every ten minutes. If this does not completely arrest the hæmoptysis, M. Vidal counsels applying Gounod's cupping glasses or ligating a limb. When fever is present, two grams of ergot of rye and one gram of sulphate of quinine divided in four doses, to be taken every three hours, M. Vidal has found successful, but condemns the use of iron or arsenic, generally considered good in treating hæmorrhage.

CATARRH SNUFFS.

For scrofulous rhinitis:

℞	Sulphophenate of zinc	20 centigrams.
	Salicylate of bismuth	4 grams.
	Iodol	3 grams.
	Tannate of zinc	2 grams.
	Pulverized tobacco	10 grams.

For chronic catarrhal rhinitis:

℞	Pulverized alum	2 grams.
	Borax	2 grams.
	Menthol	20 centigrams.
	Tannate of zinc	3 grams.
	Tannate of bismuth	3 grams.
	Locopodium	8 grams.

—*Journ. de Méd. de Paris.*

TREATMENT OF PROFUSE MENSTRUATION.

℞	Dialyzed ergotine	40 grams.
	Distilled water	70 grams.
	Glycerine	20 grams.
	Salicylic acid	20 centigrams.

T. One teaspoonful diluted with three teaspoonfuls of water to be injected in the rectum once a day after stool.—Reinstadter, *Gaz. Méd. de Liége.*

URAL, A NEW HYPNOTIC.

This body, obtained by dissolving urethane in chloral, presents itself in form of crystals soluble in alcohol; little soluble in water, which volatilizes without decomposing, and is fusible at 106°. It imparts a bitter taste. It does not modify the blood pressure, and its administration is never followed by accidents. It is prescribed with success in cardiac affections, mental maladies, hysteria, etc.—*La France Médicale.*

SOCIETY PROCEEDINGS.

Medical Society of the District of Columbia.

Stated Meeting, June 12, 1889.

DR. CHARLES E. HAGNER, PRESIDENT, IN THE CHAIR.

DR. P. J. MURPHY reported a case of

CANCER OF PREGNANT UTERUS AT TERM.

Cecilia H., æt. 34, colored, entered Columbia Hospital for Women and Lying-in Asylum, May 24, 1889. She was born in Virginia, resident of the District of Columbia for the last fifteen years; married; puberty unknown; miscarriage or abortion, none; about four years ago gave birth, after a natural labor, to a living child, which she nursed; last menstruation some time in September, 1888; time of quickening, unknown; had some morning sickness and no headache during the present pregnancy. On physical examination the abdomen was found very much enlarged; fundus uteri extending two inches above umbilicus; fœtal heart not heard; external genitals normal; cervix uteri one-half inch in length admitting tip of finger; slight œdema of the lower extremities. Urine dark amber color, acid reaction, sp. gr. 1030, no albumen. Bowels regular while in the hospital.

June 7, 9.30 A.M. Patient complained of a feeling of nausea and of pains in the back and sides; was put to bed, the nausea soon ceased, and as the pains became very slight she was left resting quietly on the bed. At 11 A.M. she had another attack of nausea and vomited about a half pint of greenish-yellow (bilious) fluid. Ordered mustard plaster over the epigastrium. At this time there was a slight flow of pale yellow fluid from the vagina, and on examination the woman was found to be in the second stage of labor, the vertex having descended more than half way through the parturient canal, the occiput rotating towards the symphisis pubis from an L. O. A. position. The nausea soon ceased and at 11.30 A.M. the occiput began to protrude through the vulva, and after a few apparently natural pains the head was delivered, and during the next pain, which followed after an interval of about a minute, a still-born female infant was expelled, followed immediately by a gush of bloody fluid (about three pints), accompanied by the placenta and fœtal membranes. The uterus, after the expulsion of the after-birth, became hard and firm, but irregular in form (nodulated), and extended nearly to the umbilicus.

Two drachms of the fl. ext. of ergot were administered internally, and as the patient now for the first time began to show decided symptoms of exhaustion (other than what might be attributed to the nausea) one drachm of the fl. ext. of ergot was administered hypodermically. The pulse was observed to quickly become very rapid and feeble, the countenance pale, and the surface of the body cold. She was kept lying still, her head lowered, the foot of the bed elevated; two drachms of whisky were given by the mouth, but she could not swallow it, and one drachm was administered hypodermically; hot-water bags were placed around the body, and the lower extremities bandaged with towels from the feet upwards. The patient, whose pulse had been scarcely perceptible, became somewhat aroused, but gradually passed into a state of low muttering delirium. She remained in this condition one hour and forty-five minutes, though repeated hypodermic injections of whisky, supplemented by tincture of digitalis, had been administered, the pulse during the whole time being very feeble. At 1.30 P.M. she raised her head and made several spasmodic efforts to turn from one side to the other, and then fell back upon the bed; her heart ceased to pulsate, and after ten or twelve spasmodic efforts to catch her breath, respiration ceased.

Throughout the post-partum period the uterus remained in the condition it had assumed at the expulsion of the after-birth. There was very little, if any, post-partum hæmorrhage from the uterus. An examination of the after-birth showed that it had been expelled entire. Throughout its substance there were interspersed numerous caseous masses, varying in size from a pea to a cherry. They were roughly estimated to compose one-tenth the mass of the placenta. During the vaginal examination, fifteen minutes before delivery, there was no perceptible hæmorrhage, the index finger on being withdrawn was tinged with a pale yellowish fluid, a small amount of which had just previously been expelled.

Child, female, weight 5 lbs. 12 ozs.; placenta, weight 1 lb.

The post-mortem was made fifteen hours after death by Dr. William P. Carr. Body fairly well nourished; rigor-mortis; abdominal walls thin and flabby, showing outline of the uterus, which can be distinctly felt as a firm, elastic, nodulated tumor, extending a little above the umbilicus. On opening the abdominal cavity it is found filled with a half gallon of bloody fluid. The uterus extending above the umbilicus is mottled with slate color, white, dark purple, and bright red spots, and is studded with firm white and bloody nodules, varying in size from a pin head to a walnut. It has a raw appearance in places, as if denuded of epithelium, and blood is oozing from nearly the whole peritoneal surface. Upon removing the uterus its walls are found to be about two inches thick, composed mainly of firm fibrous nodules, while the proper muscular structure of the organ is dark red, nearly black in places, infiltrated with blood which oozes from

its uncut surface. The surface is so soft and mushy as to resemble a blood-clot. Evidently more than a quart of blood had oozed from the peritoneal surface of the uterus into the peritoneal cavity. The ovaries are atrophied and not more than one-fifth of an inch thick. Right tube was swollen to the size of the thumb, infiltrated with serum, and of the consistency of jelly. Left tube normal size, but dark red color. Broad ligaments and all the pelvic tissues infiltrated with serum. Lymphatic glands, near the sacrum and lumbar vertebræ, as large as almonds, and of a dark red color, some nearly black. Kidneys have some fatty striæ in the pyramids. Thoracic cavity: Lungs gray, abundantly mottled with black pigment. Pericardium contains half pint of greenish-yellow serum. Heart covered with yellow fat, and one-third larger than normal. Both ventricles flabby and dilated. Both auriculo-ventricular openings so dilated that the valves are insufficient. Wall of the left ventricle apparently normal. Wall of the right ventricle of a uniform yellow color, presenting no appearance of muscular tissue and composed apparently of fat, is only one-fourth inch thick.

The cause of death was from the loss of blood from the diseased uterus, both from its cavity and from its peritoneal surface, a much smaller amount of hæmorrhage sufficing to cause death than if the heart had been normal.

Dr. J. F. Thompson said that, looking at the specimen, it seemed as if the bleeding from the outer surface of the uterus was caused by the breaking up of adhesions, due to uterine contractions during labor. There was one spot especially that looked as if adhesions had given way. It was difficult to explain this hæmorrhage unless it was upon this theory.

To a question by Dr. Hamilton:

Dr. Murphy replied that there had been no traumatism during pregnancy, nor had there been hæmorrhage of an unusual character during labor.

Dr. Hamilton thought that adhesions between the diseased organ and neighboring parts, and their separation, accounted for the hæmorrhage. It was well known that after injuries to the mesentery the vessels would bleed freely upon contraction of the bowels. In his case of wound of the mesentery and bowels a very free hæmorrhage supervened from a small abrasion, forming a large hæmatoma. If this could occur from a small point, we could readily see how the breaking up of adhesions over so large a surface would lead to a profuse and fatal hæmorrhage.

Dr. Murphy, in closing, said he would defer further remarks until after the microscopic examination of the specimen. He took the tumor to be malignant. His first idea of the cause of the hæmorrhage had been that it was due to pressure upon the dense fibrous, non-yielding tissue of the uterus by the contraction of the abdominal muscles. But he now thought that Dr. Thompson's suggestion afforded a clue; that, in fact, it explained the hæmorrhage to his satisfaction; he therefore accepted it as correct.

Dr. John B. Hamilton reported a case of

DOUBLE CRYPTORCHIS.

The patient, aged 49, was referred to him through the kindness of Dr. Johnson. Dr. Hamilton found a swelling in the left groin in the inguinal canal, while a smaller swelling, about the size of a filbert, occupied the right groin. The former was about the size of a hen's egg. The scrotum was empty, hence it was a case of double cryptorchis, a name properly applied, even if the testicle was located in the canal. Cases of monorchis were comparatively common, but a double cryptorchis was rare. There was in this case severe and constant pain in the left swelling, which had undergone sarcomatous degeneration. The operation for its removal was by a simple incision over the canal, enucleation of the diseased organ, and ligature of the cord by catgut, after which the stump was dropped back and the pillars closed by sutures so as to prevent hernia. The other testicle was not enlarged, but in the canal, and as it was not painful and gave no trouble, it was left alone. It would in time, probably, undergo the same degeneration. He had desired to bring it down into the scrotum, and on grasping it could almost get it into place, but the cord was stretched so greatly that he feared atrophy or rupture of the vessels would result, hence he preferred not to put it to the test. He would, on a future occasion, present a full paper on the entire subject, but at present simply desired the reference of the specimen to the Committee on Microscopy.

Obstetrical Society of Philadelphia.

Stated Meeting, Thursday, October 3, 1889.

Dr. Theophilus Parvin in the Chair.

Dr. E. P. Bernardy reported a case of

SUPPURATING POST-PUERPERAL HÆMATOCELE. OPERATION, CURE.

Mrs. McM., æt. 38, sixth pregnancy. Fell in labor April 19, 1889, about 8 o'clock in the evening; head presentation, right occipito-posterior position; delivered about midnight of same evening of a large living male child. Labor seemed normal, but somewhat tedious in regard to her former labors, no doubt caused by the position of the head, which gradually rotated to an anterior occipito. There was a constant aching feeling between the pains, not that absence of pain generally expected in natural labor pains; as the pa-

tient remarked, it felt like a bad toothache. Third stage normal, placenta came away within twenty minutes, uterus contracted rapidly and firmly. Shortly after the termination of labor, the muscles of the calf of the left leg became painfully cramped, lasting nearly an hour; hot applications and rubbing seemed to relieve the patient. Pulse about 80, but weak.

About 6 o'clock in the morning, the husband called at my office and stated that about 4 o'clock his wife had been taken with a sudden sharp pain under the right breast, which prevented her breathing freely. Ordered teaspoonful of liq. morphiæ sulph. every half hour, and warm applications to the side. Saw her shortly afterwards; pulse 120, temperature 101°. Sharp, agonizing pain below right breast; impossible to take a full breath. Auscultation negative, no pain over the abdomen, strong pressure being made over its entire surface.

April 23, pain under breast relieved. Sense of fulness of the abdomen, constipation, cannot pass her urine, urine drawn off by catheter; 1 drachm Rochelle salt every hour until free purgation took place. Next day, pulse quick and irritable, temp. 103°, tongue dry, still unable to pass her urine, bowels open freely; complains of a sense of fulness in the rectum. Examination by the rectum shows a tumor about the size of an egg pressing in its walls; vaginal examination reveals a tumor behind and to the left of the uterus. Ordered hot vaginal injections of $\frac{1}{4000}$ bin. iod. mercury, poultices over abdomen. There being no positive pain, only a feeling of fulness, no opium was given. From this time up to the day of operation (May 5, 1889) the temperature varied from 102° to 104°; under large doses of sulphate of quinine it would drop.

April 27, 1889, examination by rectum and vagina shows the tumor increasing rapidly; it is now the size of a large orange, and very sensitive to the touch.

May 1. The tumor now fills the entire rectal cavity, pushing down to almost the external sphincter. The entire left side of the pelvis is completely filled by the tumor, pushing the enlarged uterus, which is movable, well to the right side, making it appear as if there were another tumor. Advised operation.

May 3, case seen by Dr. Joseph Price; same condition as on May 1. Patient hectic toward the afternoon; face has assumed a peculiar yellowish appearance, eyeballs yellow.

May 5, operation. Present, Drs. Joseph Price, M. Price, Solis-Cohen. Operator, Dr. Eugene P. Bernardy. The usual median abdominal incision was made. On introduction of the finger in the abdomen, the entire left side of the pelvis behind the uterus and broad ligament was found filled by a tumor, surrounded by adhesions; slight adhesions to the intestines, which were readily separated before enucleating the left side tumor. In passing the finger behind the right side of the uterus, the finger ruptured some slight adhesions, entering a cavity from which freely flowed thick black blood, looking and smelling like blood contained in an extra-uterine sac. After enucleating the left side tumor it left an immense cavity which was, as well as the abdominal cavity, well douched with hot water. Both ovaries and tubes were healthy, and were not touched. Glass drainage tube introduced, and abdomen closed.

On the day of the operation the pulse was 120, temp. 102°. The day following, pulse 96, temp. 101°. Third day after operation, temperature and pulse normal. On the sixth day, glass drainage tube changed to rubber tube. Three days later, tube taken out; stitches taken out the sixth day, union except where drainage is placed. May 23, 1889, entire cut healed, and patient discharged during the first week in June.

DR. J. PRICE: I saw this patient with Dr. Bernardy and Dr. Cohen; and to have a purely medical man urge the importance of abdominal section in a post-puerperal case is very encouraging. There was a considerable quantity of broken-down blood, which was washed out with difficulty. If the case had not been a post-puerperal one, the history would have been that of an extra-uterine fœtation. This case demonstrates most forcibly the fallacy of claims made in regard to refinements in diagnosis, and shows the folly of claiming a positive diagnosis.

DR. H. H. KYNETT: I report the first two cases because they present some important features for consideration in the

TREATMENT OF PELVIC TROUBLES.

The specimens of the first case I am not able to show to-night, owing to the lapse of time since removal.

Case 1.—L. P., colored, æt. 30, married seven years, and never pregnant; complaining more or less ever since marriage. Abdominal section April 2, 1889. Removal of both appendages for double pyosalpinx and double ovarian abscesses; release of adhesions, irrigation, and drainage. When the peritoneal cavity was opened, there was a free discharge of muddy, blood-stained fluid, indicating a marked peritonitis. Investigation showed this fluid was contained in a sac formed by inflammatory processes, shutting off the pelvic portion from the general peritoneal cavity. The adhesions, however, were friable and easily broken. Contained in this pelvic abscess cavity were four distinct pus sacs, viz.: two huge pus tubes and two ovarian abscesses, the larger the size of an orange. The removal of these sacs was not difficult; the patient recovered promptly, and is now in better health and spirits than since marriage.

Points worthy of notice in this case are:

1. Four distinct abscess cavities within a fifth.

Query, what would have been the result of Martin's treatment of pelvic abscess by vaginal drainage?

2. In spite of careful manipulation, both ovarian abscesses were ruptured in removal, and the walls of the containing sac were very easily broken up. Query, what might electricity, properly applied, have accomplished?

3. When first seen, the patient did not complain of symptoms of acute trouble at all commensurate with the condition revealed.

4. Menstruation has occurred regularly since the operation, bleeding being profuse and lasting three days.

5. Both patient and her husband gave unquestionable histories of gonorrhœa.

The second case was operated on to produce premature menopause for a rapidly growing fibroid uterus.

Case 2.—L. A., white, æt. 28, married six years, no children. Patient believed that she miscarried twice when about two months pregnant, the last time four years ago. Since puberty, menstruation has been very profuse and painful. For the last four years she has been bleeding three-quarters of the time, and latterly has been incapacitated for work. Abdominal section September 11, 1889. Removal of both appendages for double hydrosalpinx and left ovarian cyst. There was also a small cyst in the right ovary. The adhesions were universal and exceedingly tough, making the removal difficult. The uterus was large and hard. Irrigation and drainage.

Patient made an uninterrupted recovery, and is now sitting up. This case is particularly interesting, as before operation it seemed a fit case for electricity. The uterus being high in the pelvis and large, the condition of the appendages was not easily discoverable. Irrigation and drainage were used for fear of hæmorrhage from the separated adhesions.

The third case is interesting on account of the comparative variety of the tumor.

It was removed Sept. 8, 1889, from the breast of Mrs. P., white, age 32, married six years, two children. When the patient began to menstruate, at the age of 16 years, she first noticed a small lump in the inner of left breast, on a level with the nipple. It occasioned no trouble. It remained quiescent during her first gestation and nursing, in fact until three months after her second child was born, when it began to enlarge. She never had any difficulty in nursing, but remarked that after the tumor began to grow she had less milk in the left breast. At this time, also, the tumor pained her for a few days and led her to fear an abscess. The pain subsided, but the enlargement continued. She was afraid of cancer, and desired the tumor removed.

When seen, the tumor was somewhat larger than it now is. The skin was normal in appearance and freely movable over the mass. The superficial veins were enlarged. The nipple was not affected, and the growth appeared outside the areola. It was firmly adherent in the glandular structure of the breast, and required dissection by the knife. Its contents had the greasy, sticky, cheesy appearance of a dermoid cyst. There were no other points of thickening or hardness discovered in the breast.

I believe it to be a solid milk cyst. Microscopic examination has not yet been made.

Dr. W. L. Taylor reported the

REMOVAL OF A LARGE OVARIAN CYST, FOLLOWED BY RUPTURE OF THE RIGHT COMMON ILIAC VEIN.

The patient, of whose condition I beg to present the following history, was sent to me by Dr. D. L. Hetrick, of Bedford county, after he had diagnosed the existence of an ovarian cyst.

Miss L. M., æt. 24, single, tall, very much emaciated; abdomen enormously extended; puberty at 19; menses regular for three years, until July, 1887. Two weeks before her menstrual period, whilst in the harvest-field, after drinking a large quantity of cold water, had a severe chill. Menses failed to appear in July and August. In September, 1887, the menstrual flow reappeared, but there was no discharge again until March, 1888, when there was a slight flow for three or four periods, disappearing then until after the operation. In November, 1887, had an attack of malarial fever, but never was well after the chill in July. After this attack of malaria a lump appeared in right side of abdomen, which never caused any pain, but only a sense of discomfort from pressure, and which increased rapidly in size.

Upon examination the abdomen gave evidence of the presence of a very large encysted fluid, ovarian in character. On July 7 I operated, with the assistance of Drs. W. A. Carey and E. R. Kirby, and removed a non-adherent cyst of the right ovary. The fluid of the cyst was syrupy and very heavy, weighing fully fifty pounds. The pedicle was unusually thick and was tied in sections, and finally with a Tait ligature. The steps of the operation were devoid of special interest, and but little cyst fluid or blood escaped into the abdominal cavity. This was thoroughly washed out, and I remarked the absence of bleeding-points and proceeded to protect the intestines preparatory to the insertion of my parietal stitches. Noticing a slight oozing of blood from the region of the pedicle, I investigated, and found that a couple of veins, which were greatly distended, had ruptured just beneath my ligatures. These I tied securely and removed cloths. Whilst doing this, I noticed higher up—fully as high as the sacro-iliac juncture, and to the right side—what appeared like an adherent intestine, rapidly distending, with a central portion most distended.

This rapidly thinned out and gave every appearance of speedy rupture. Touching it gently with my finger, it burst instantly, and there was a frightful gush of blood. I quickly grasped with my fingers the bleeding vein, for such it proved to be, and once more it broke down. I then caught it with a large Pean forceps, which imperfectly controlled the hæmorrhage, and, guiding with my left index-finger a large curved needle, I separated the vein from its artery and carried ligatures securely around it. These immediately stopped all hæmorrhage, but caused a very decided and alarming venous swelling on either side of my ligatures. I removed the large quantity of blood carefully with my hands, and, fearing to even irrigate, closed up after introducing a drainage tube. At the close of the operation, which was lengthened by the hæmorrhage from three-quarters of an hour to nearly two hours, the patient's pulse was 160, temperature subnormal, and respirations about 40. Everything certainly pointed to a positive recurrence of hæmorrhage, and she was most carefully watched.

The amount of bleeding, as shown by the drainage tube, for the first twenty-four hours was small, comparatively speaking, one to one and a half drachms of bloody serum being removed about every two hours. On the third day the bleeding was more profuse; as much as one-half to three-fourths of an ounce was drawn off several times. But this rapidly diminished in quantity, and the tube was removed on the sixth day. On the fourth day the temperature rose to 102°, but quickly dropped to from 99° to 101°, the pulse remaining very frequent, about 120, until far along in convalescence. There never was at any time any evidence of interference with return circulation in right leg. There was, on about the fourth or fifth day, slight pain in right leg, but this also occurred in the left leg, and was rheumatic in character. Convalescence was rapid and uninterrupted, and patient returned home in about four weeks. The size of the vein from which the greatest hæmorrhage occurred was without doubt much increased at the point of hæmorrhage. This dilatation fitted in a sulcus in the cyst wall, and needed only the removal of its support—the cyst wall—and the sudden reflux of blood to cause its over-distention and rupture. Its location and relation to the artery and size proved it to be the right common iliac. The possibility of such a varicosed condition of either of the iliac veins should deter us from emptying a large cyst too quickly, or from turning it out whilst but partially emptied. A smaller canula and complete removal of fluid before the sack is drawn out would be much safer and render less likely an accident which, though infrequent, is yet possible. Here and there, filling up the sulci in the tumor wall, or the interstices between globules, these large veins are apt to distend, and the greater the pressure on either side, the greater will be this distension and thinning of the coats of the vein to the extent of the space. As long as the return of blood is hindered by the pressure of the tumor, and as long as this thin-walled venous sac has the support of the tumor wall, there is but little risk of rupture from over-distension. But remove this support suddenly, remove at the same time this interference with circulation, and we have, as in my case, a hæmorrhage almost uncontrollable. It is almost impossible to conceive of ligation of such a large and important vein without some interference with circulation—at least some œdema. But collateral circulation is plentiful between the two sides, and in my case all the veins were so enormously distended below the tumor that a compensatory circulation was soon established.

Three months after operation Dr. Hetrick kindly writes, stating that our patient is rapidly gaining flesh and is well.

DR. WILLIAM GOODELL: This seems to be an unique case. I have never met with anything of the kind. The theory of varicose condition of the veins is a plausible one. I have never seen anything like it in simple unadherent cysts. In intraligamentary cysts I have often torn deep-seated veins, and have had difficulty in checking the hæmorrhage.

DR. DRYSDALE: Accidents of this kind must be very rare. I have never met with anything of the kind. I imagine that it could only happen where the walls of the vein are diseased, or torn during the operation.

DR. E. W. CUSHING, of Boston: I have no knowledge of any case of rupture of a vein during operation, except from injury. I do not see how the removal of pressure could cause rupture in one place, where all of the veins are varicose, although I have known this to cause syncope.

DR. J. PRICE: I think that there is great danger of wounding the vein by the use of the Baker Brown or Peaslee needle. I think that there is one case on record in which the operator stuffed towels into the abdomen and put the patient in bed to die, without any attempt to secure the offending vessel. These accidents have occurred from traumatism, from manipulation, and wounds made by the use of instruments.

DR. WILLIAM L. TAYLOR: The hæmorrhage occurred so long after any traumatism could have happened, and was so much higher than the pedicle, that I think it cannot be attributed to traumatism. The hæmorrhage was spontaneous. It did not occur gradually, but there was a sudden gush of blood following the touch of my finger.

(*To be concluded.*)

DOMESTIC CORRESPONDENCE.

Audi Alteram Partem.

The Use and Danger of the Nasal Douche.

To the Editor:—At the last meeting of the American Medical Association Dr. W. C. Richardson (THE JOURNAL, November 30, 1889), reported three instances of acute inflammation of the middle ear resulting from the use of a nasal spray under high pressure. Since some writers have recommended the spray for cleansing the nose on account of its safety as compared with the more dangerous nasal douche, it does not seem out of place to me to relate my own extensive experience with the use of the latter method. As long as numerous observations have shown that the douche can do harm, it ought not to be given into the hands of patients except on proper indications. This rule, however, is often overlooked, and the douche is not rarely recommended by general practitioners when of doubtful utility.

The only thing the douche can do, is to remove secretion, and it can do this more efficiently than any other method which the writer has ever tested, when the secretion is either abundant or tenacious. Especially is this true when it dries in the form of crusts, as in ozæna. It would of course not be good practice to let the patient remove the secretion for mere palliative purposes with the douche, when more radical means in the hands of the surgeon can cure the disease. Hence, about the only diseases in which I deem it best to give the douche to the patient are the atrophic forms of rhinitis or ozæna and the persistent suppurative rhinitis of children, which, if allowed to go on unchecked, may develop into ozæna. In the latter case, however, I advise the douche only if I cannot see the patient sufficiently often myself.

Personally I use the douche to remove secretion before applying topical remedies to the nose. I find it besides very valuable in searching for a minimal secretion for diagnostic purposes. For this purpose I let the water flow out of the nose into a black rubber basin in which every flake of mucus or pus is readily seen.

I have used the douche, at the least calculation, from 6,000 to 8,000 times in my office, without ever having seen any bad consequences. I have also recommended it to more than a hundred patients, and do not know that I can trace any accidents to its use, beyond, perhaps, one relapse of suppuration of the middle ear. If I have been more fortunate with the use of the douche than some other specialists, it may be due to some precautions which I habitually take. I never use the douche except when both nasal passages are permeable or until after I have made them permeable with forceps (in the case of crusts), or the use of cocaine.

Since the recommendation by Lucas I have always used a solution of bicarbonate of soda, about one-half per cent. in strength, in preference to salt. Not having used salt much I could not say whether it might increase the danger to the middle ear, but I do know that soda solution is rather more convenient for cleansing purposes than salt, although not quite as agreeable to the patient. The water should of course be blood warm.

I find a plain rubber bulb, the natural end of which is used instead of a nozzle, a more manageable instrument than the usual douches in the market or the fountain syringe. The pressure on the bulb can be varied by the hand, or stopped instantly whenever a desire to cough or swallow is felt, and the instrument is always ready for use.

Perhaps more than a dozen times patients have felt the water entering the ear while I was using the douche. With the intention of stopping the feeling of fulness in the ear to which this gave rise I at once inflated the middle ear with air the very first time this accident occurred to me. This procedure stopped all annoyance and no further consequences resulted. I have had the same experience perhaps fifteen to twenty times and it never led to any damage. If the use of the Politzer bag fills the ears and relieves the uncomfortable sensation, it is sufficient; if not, I resort at once to the Eustachian catheter.

The douche has proven a very reliable method in my hands in the treatment of persistent forms of chronic suppuration of the middle ear, especially when bilateral. It has been strenuously urged by Schwartze and his disciples that one of the best means of cleansing the suppurating tympanic cavity is irrigation through the Eustachian catheter. But this procedure is more difficult than mere inflation of air, and of course meets with resistance in small children. The nasal douche, practiced with the bulb as described by me, can easily force a free stream through both Eustachian tubes if some pressure be used. If necessary the patient may be directed to swallow at the same time. In some instances of suppuration of one ear only in which I could not succeed in forcing water through the catheter into the ear, I have used the douche with success, preventing the water from entering the other ear by pressing the finger into the meatus. However, since this is not an absolute hindrance to the flow of water into the tube, I would prefer in such cases irrigation through the catheter if possible. Washing out retained pus from the middle ear with the aid of the nasal douche has often assisted me in reducing the time of treatment of persistent suppuration of the tympanic cavity.

H. GRADLE, M.D.

Central Music Hall, Chicago.

BOOK REVIEWS.

LECTURES ON BRIGHT'S DISEASE. By ROBERT SAUNDBY, M.D. Edinburgh, F. R. C. P. London; Emer. Senior Pres. of the Royal Medical Society; Consulting Physician to the Hospital for Diseases of Women, Birmingham, etc., etc. With fifty illustrations. New York: E. B. Treat. 1889. Pp. vi, 290.

This is a thoughtful, scholarly presentation of a subject to which the writer has given much attention for years. The various topics of the work are well illustrated by the citation of clinical cases coming under his observation. A thorough familiarity is shown throughout with the work of the best investigators at home and abroad, while the character of the author's own work is shown by the number of illustrations which he has drawn from his own preparations.

INEBRIETY: ITS ETIOLOGY, PATHOLOGY, TREATMENT AND JURISPRUDENCE. By NORMAN KERR, M. D., F. L. S., etc. Second edition. London: 1889. Pp. 471.

The first edition of this work appeared only a little over a year ago. Such an early call for a new edition shows how favorably the book has been received. In general the author takes the same ground as do most of the recent writers upon the subject, namely, that inebriety is a nervous disease closely allied to certain forms of insanity, manifesting itself sometimes periodically, sometimes continuously; that the patient must have some predisposition to inebriety, the most potent cause being hereditary influence; and, in the matter of treatment, that the physician must be guided by the same principles in accordance with which he studies and treats other diseases. There is apparently nothing new on the subject of treatment. It is still a vexed question, on which authorities differ.

MISCELLANY.

LETTERS RECEIVED.

Dauchy & Co., New York; Dr. James A. White, Richmond, Va.; Dr. Henry O. Marcy, Boston; Dr. D. B. St. John Roosa, New York; American Paper Co., Chicago; Fairchild Bros. & Foster, New York; Armour & Co., Chicago; Chas. H. Phillips Chemical Co., New York; The Imperial Granum Co., New Haven, Conn.; Dr. D. Benjamin, Philadelphia; J. Movius & Son, New York; Chicago, Milwaukee and St. Paul Ry. Co., Milwaukee, Wis.; Dr. Sydney Henry, Mabbettsville, N. Y.; Central Indiana Hospital for the Insane, Indianapolis, Iud.; Dr. Victor C. Vaughan, Ann Arbor, Mich.; Dr. Henry A. Martin & Sons, Roxbury, Mass.; Dr. R. Stansbury Sutton, Pittsburg, Pa.; Dr. J. S. B. Alleyne, St. Louis, Mo.; Dr. W. H. Walker, Louisville, Ky.; B. Westermann & Co., New York; Dr. Chas. F. Disen, Minneapolis, Minn.; Good Health Publishing Co., Battle Creek, Mich.; The Illustrated Medical News Co., London, Eng.; Dr. Henry J. Smith, Blackshear, Ga.; Dr. J. Z. Gerhard, Harrisburg, Pa.; Dr. James D. Robison, Wooster, O.; Century Chemical Co., St. Louis, Mo.; Dr. J. W. Robertson, San Francisco, Cal.; J. Astier, Paris, France; Dr. E. H. Pratt, Chicago; Moore's Newspaper Subscription Agency, Brockport, N. Y.; Dr. A. M. Fernandez, New York; Dr. M. D. Mann, Buffalo, N. Y.; Dr. S. S. Purple, New York; Dr. R. J. Dunglison, Philadelphia; Scott & Bowne, New York; E. Culbertson, Havana, O.; Dr. S. P. Deahofe, Potsdam, O.; Dr. Wm. A. James, Harrisonville, Ill.; Sharpe & Smith, Chicago; Malted Milk Co., Racine, Wis.; Dr. R. Galloway, Bloomington, Ill.; Dr. Harold N. Moyer, Chicago; American and Continental Sanitas Co., New York; Dr. Chas. T. Parkes, Chicago; Dr. J. B. Trowbridge, Hayward, Wis.; Dr. G. V. Woolen, Indianapolis, Ind.; Dr. J. H. Hausen, Lamont, Ia.; The National Advertising Bureau, Baltimore, Md.; Dr. Witt C. Pond, Hartford, Conn.; Longmans, Green & Co., New York; Southern Medical Record, Atlanta, Ga.; Dr. H. R. Hancock, Peach Tree, Tex.; Dr. D. K. Dickinson, Lead City, S. Dak.; The Alabama Medical and Surgical Age, Anniston, Ala.; Dr. H. L. Getz, Marshalltown, Ia.; Dr. H. C. Jones, Decatur, Ill.; Dr. M. H. Turner, Hammondville, N. Y.; Doliber-Goodale Co., Boston; Dr. J. M. Toner, Washington, D. C.; Dr. C. L. Hatfield, Farmer City, Ill.; J. H. Chambers & Co., St. Louis, Mo.; Thos. Swoger, Beaver Falls, Pa., William Burgess Printing Co., Chicago; Dr. Henry W. Williams, Boston; J. H. Bates, New York; Surgeon-General U. S. Army, Washington, D. C.; Wm. R. Warner & Co., Philadelphia; Dr. J. H. Kellogg, Battle Creek, Mich.; The World, New York; Dr. John G. McDougal, New Lexington, O.; Dr. J. J. Stone, Argyle, Minn.; Dr. N. E. Landon, Newark, N. J.; University of Michigan, Ann Arbor, Mich.; Sharpe & Dohme, Baltimore, Md.; Dr. J. E. Boylan, Cincinnati, O.; T. W. Hannaford, London, Eng.; The Chicago Policlinic, Chicago; Thos. F. Goode, Buffalo Lithia Springs, Va.; Dr. C. L. C. Atkison, Tuskegee, Ala.; Dr. S. S. Halderman, Portsmouth, O.; Dr. George Wm. Harrison, Bernalillo, N. M.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from December 28, 1889, to January 3, 1890.

By direction of the Secretary of War, the leave of absence granted First Lieut. Julian M. Cabell, Asst. Surgeon, in S. O. 249, A. G. O., October 25, is extended one month. S. O. 304, A. G. O., December 31, 1889.

By direction of the Secretary of War, par. 1, S. O. 180, Dept. of the Missouri, December 6, 1889, transferring First Lieut. Nathan S. Jarvis, Asst. Surgeon, from Ft. Lewis, Col., to Camp Wade, Kingfisher, Ind. Ter., is confirmed. Par. 6, S. O. 303, A. G. O., December 30, 1889.

By direction of the Secretary of War, the leave of absence granted Capt. E. A. Mearns, Asst. Surgeon, in S. O. 244, October 19, 1889, from this office, is extended two months. S. O. 303, A. G. O., December 30, 1889.

Official List of Changes in the Medical Corps of the U. S. Navy for the Week Ending January 4, 1890.

Medical Inspector Jno. H. Clark, ordered to the U. S. S. "Baltimore."

P. A. Surgeon Oliver Diehl, ordered to the U. S. S. "Baltimore."

Asst. Surgeon E. R. Stitt, ordered to the U. S. S. "Baltimore."

Surgeon Howard Smith, ordered to the U. S. S. "Alliance."

P. A. Surgeon J. D. Gatewood, ordered to the U. S. S. "Despatch."

Surgeon J. R. Tryon, ordered to the Naval Medical Examining Board.

Medical Inspector W. K. Scofield, ordered to special duty at New York City.

P. A. Surgeon D. M. Guitéras, ordered to the Naval Hospital, Philadelphia, Pa.